

THE  
ROMANCE  
OF  
EVERIFARM

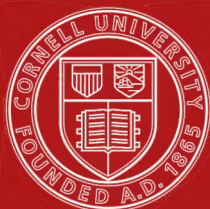


HARVEY J. SCONCE

CORNELL UNIV



3 1924 051 839 490



# Cornell University Library

The original of this book is in  
the Cornell University Library.

There are no known copyright restrictions in  
the United States on the use of the text.





# **THE ROMANCE OF EVERIFARM**



THE MACMILLAN COMPANY  
NEW YORK · BOSTON · CHICAGO · DALLAS  
ATLANTA · SAN FRANCISCO

MACMILLAN & CO., LIMITED  
LONDON · BOMBAY · CALCUTTA  
MELBOURNE

THE MACMILLAN CO. OF CANADA, LTD.  
TORONTO





The policeman of the big farm. The farmer's best friend—Bob White.



# The Romance of Everifarm

BY  
HARVEY J. SCONCE

New York  
THE MACMILLAN COMPANY  
1922

*All rights reserved*

PRINTED IN THE UNITED STATES OF AMERICA

COPYRIGHT, 1922,  
BY THE MACMILLAN COMPANY.

---

Set up and printed. Published October, 1922.

Press of  
J. J. Little & Ives Company  
New York, U. S. A.

## PREFACE

As you step from your front porch into the radiance of a perfect spring morning, you come face to face with a great group of folk, which is overlooked by the majority of us, as human beings. Yet each has his distinct personality, with a real mission in life, and can always be found working at his job.

In the rush and hurry of this world, we overlook many of these friends who mean so much to us, and it is the purpose of this little volume to introduce the folk of the great out-of-doors to the American Boy and Girl; to the busy man of the city who has little opportunity to know them; to the man in the shops, in the factories and mines, who would welcome a day in the country to make their acquaintance; and to the American farmer, who, while he works among these folk constantly, has never taken the time to recognize them as his friends.

In the distance is heard the booming of the Prairie Chicken. Bob White on a near by fencepost, is

informing the enemies of the grain fields, that he is on police duty for the day. Cock Robin hops briskly across the lawn to pick up a caterpillar, hurrying to his breakfast of leaves on Prairie Rose, who waves "good morning" to you, as you pass along. The big black spider's web, finished just the day before, hangs like gossamer, resplendent in the morning dew, as it stretches from the Sumac to the Alder bushes, and the Spider himself cannily lies in wait for the coming of the big blue flies.

Peter Rabbit, in his morning jaunt, pulls up on his haunches, and pertly asks the big white mushroom how he happened to get there so suddenly. Hopps, the Toad, is blinking in the sunlight, watching a Butterfly, as he circles around the Weigela bush, competing with Honey Bee and Bumble Buzzer for the early morning nectar.

You question, How did all this happen? Does it affect me and my industry, and how? Are all these folk necessary for the welfare of humanity? Are they a part of the Great Divine Plan?

They must be. The great Oak's leaves rustle understandingly, wisely, in the morning breeze. The Pussy Willow acquiesces in this opinion, as the Cardinal, most beautiful of red birds, swings on one of the swaying branches, and proclaims to the world



that he is of royal birth and has a real purpose in life.

Each with his definite goal in view, and task to fulfill is essential to the comfort of the human race, and without most of them, we would perish. If this book induces you to become friends with them, then it will have fulfilled its mission.

THE AUTHOR.



# CONTENTS

CHAPTER	PAGE
I. A SUMMER IN A CLOVER FIELD . . . . .	11
II. HAPPY JACK SQUIRREL . . . . .	19
III. THE ADVENTURES OF A KERNEL OF CORN . . . . .	30
IV. MARTIN AND HIS BIRD FRIENDS . . . . .	43
V. PRAIRIE ROSE . . . . .	56
VI. THE HACKBERRY TREE TELLS HIS STORY . . . . .	66
VII. THE ROMANCE OF THE WHEAT KERNEL . . . . .	81
VIII. FRIENDLY ENEMIES, THE ANIMALS . . . . .	91
IX. THE LIFE STORY OF AN APPLE BLOSSOM . . . . .	109
X. COCKLE BURR, THE ROUGH-NECK . . . . .	117
XI. JIM CROW . . . . .	133
XII. ON THE TRAIL OF THE FUSARIUM SPORE . . . . .	147





## ILLUSTRATIONS

Bob White—the Policeman of the Farm . . .	<i>Frontispiece</i>
	PAGE
A Permanent System of Farming . . . . .	12
The Big Shorthorn Steer . . . . .	13
Prairie Chicken in a Hurry . . . . .	16
Reddy Fox's Winter Home . . . . .	17
Happy Jack as a Youngster . . . . .	26
The Big Elm . . . . .	27
Happy Jack Having Lunch . . . . .	28
Jack Shifts the Blame for the Robbery . . . . .	29
Happy Jack's Play Ground . . . . .	30
Winter Quarters for Corn Kernel . . . . .	31
The Aristocrats of Their Race . . . . .	32
Hand Pollination of the Best Individuals . . . . .	33
"Uncle Joe" Cannon, Inspecting the Work . . . . .	34
The Destruction of Corn Plant by the Ant . . . . .	35
Answering the Call . . . . .	36
Scientific Breeding of the Corn . . . . .	37
Bob White and His Family in the Snow . . . . .	40
A Perfect Hill of Corn . . . . .	41
Martin Resting After His Long Journey . . . . .	46
The Night Watchman and the Garden Policeman . . . . .	47
Bluey and Scrappy Have Breakfast with Reddy Woodpecker . . . . .	50
Cock Robin Feeds the Youngsters . . . . .	51
The Awakening . . . . .	54
Humming Bird in Action . . . . .	55
Wild Flowers Amid the Silence of the Forest . . . . .	56
The Old Home of Prairie Rose . . . . .	57
The Winding Woods Road . . . . .	60
Bob White Leaves His Trail in the Snow . . . . .	61
Prairie Rose in His New Home . . . . .	64
The Highway Beautiful . . . . .	65

	PAGE
The Big Hackberry in the Lonesome Road . . . . .	68
At Christmas Time . . . . .	69
The Big Hackberry with His New Friends . . . . .	80
The Wheat Crop Requires Fast and Heavy Work . . . . .	81
Foot Prints of the Big Prairie Rooster . . . . .	84
It was a Hard Life for Old Dobbin in the Old Days . . . . .	85
The Big Tractors Do It Easier Now . . . . .	88
After the Heavy Work is Over . . . . .	89
"And He Asked Me if I Had Ever Seen Snow" . . . . .	94
"I Had a Lot of Fun Last Night" . . . . .	95
Peter Rabbit Needs to Watch this Pair Constantly . . . . .	98
Mallard Duck—Contented but Suspicious . . . . .	99
Mallard Duck Goes to His Feeding Grounds . . . . .	100
Jerry Muskrat's Home . . . . .	101
Winter . . . . .	106
Spring . . . . .	107
About Ready for the Apple Show . . . . .	110
Neglect . . . . .	111
Cockle Burr Went Home with Reddy Fox . . . . .	120
Reddy Fox Travels Across Country . . . . .	121
Where Bobby Coon Goes Fishing . . . . .	124
Cockle Burr in His Airplane . . . . .	125
An Airplane View of the Big Farm . . . . .	132
Cockle Burr and Lieut. Bob Make a Landing . . . . .	133
The View from Jim Crow's Front Door . . . . .	138
The Robber and the Gold . . . . .	139
The Old Rail Fence . . . . .	146
The Big Party . . . . .	147
The Villain of the Wheat and the Corn Fields . . . . .	150
Where the Villain was First Discovered . . . . .	151
The Results of His Work . . . . .	154
His Winter Home . . . . .	155
His Various Disguises . . . . .	158
His Victims . . . . .	159
The Battle Ground . . . . .	162

*All Photographs by the Author*

# THE ROMANCE OF EVERIFARM

## A SUMMER IN A CLOVER FIELD

**T**HE first story of this volume tells of the life history of Red Clover who, as a small seed, with millions of others, was sown with the spring wheat in one of Farmer Good's big fields. The clover was sown in this field because, by analysis, it had been discovered that the soil was lacking in nitrogen, and Farmer Good knew that the clover plant was the fellow who could supply this most necessary element of plant food. The tiny clover seed, coming in contact with the moisture of the soil, soon germinated, and at once sent down two tap roots to gather the moisture and the plant food which was to build the plant that would eventually restore the fertility to the big farm. The heavy freeze of April was quite disastrous to several of the young plants, but this seed, being well covered and having gained a good start, survived along with the great majority. Owing to the rapid growth of the wheat and the crowding of enemy weeds, such as plantain, ribbon grass, foxtail, and others, the growth

of clover was somewhat slow. However, as soon as the wheat was harvested, with the sunlight and warm days following and with gentle showers, progress was much more rapid. The primary stems began to produce a rosette of leaves from whose axils ten leafy branches were sent out. Early in the summer tubercles appeared on the roots and the work of gathering nitrogen from the air began.

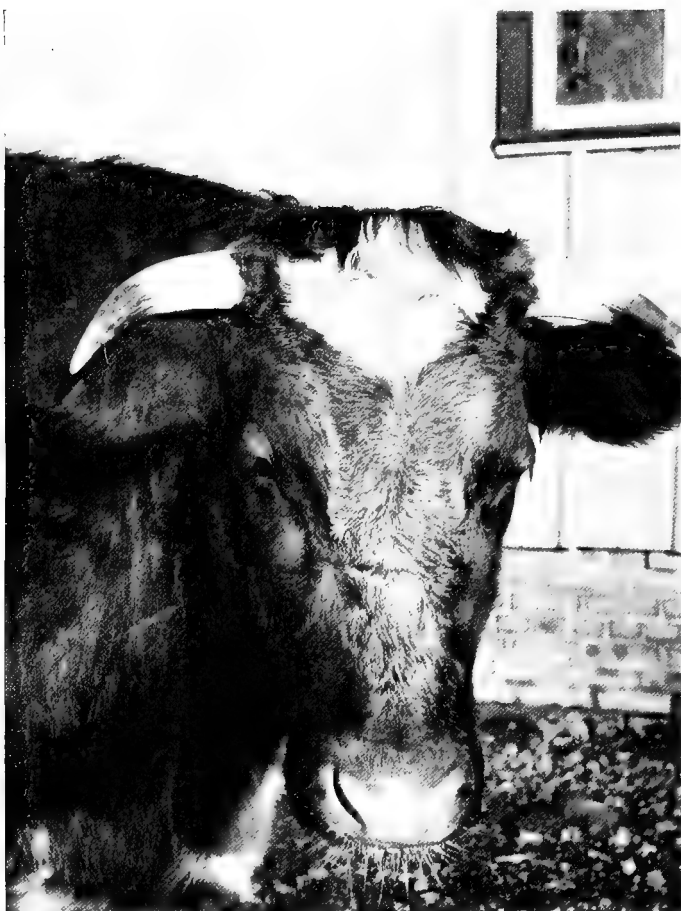
A short time after the wheat was harvested, Farmer Good turned his shorthorn steers in the field to eat the clover. One of these steers was a particularly fancy animal, a beautiful roan shorthorn that was being fitted for the International Live-Stock Exposition. He was enjoying himself very much as he picked off the young clover, coming closer all the while to the place where our subject, the clover plant, was now making such rapid growth. It was nearly midday and as Strawberry Prince, the big roan steer, had eaten so much that his sleek hide was as tight as a drum, he felt the need of a rest, so selecting a favorable spot he lay down, his shapely head just a few inches from our clover plant, who, after looking him over for a few moments, exclaimed:

“My! My! But you are the biggest thing I ever saw. How many of us does it take to fill you up?”





Applying Phosphate Fertilizer to the Clover, Creating Plant Food for the Succeeding Crops.



Longing for the Clover Field.

Looking down, the big steer noticed the anxious look on Clover's face and, being of an amiable disposition, he cheerfully said: "I usually eat about five hundred for breakfast and the same amount for dinner in the evening, but always rest during the middle of the day. You see when I nip off the top of the clover stems, it makes it branch better, and really improves it for next year. You remarked about my size a moment ago," continued Prince. "Well, you are responsible for that, do you know it? You see, Farmer Good buys the bone meal fertilizer to get the phosphorus. This is put on the land. When you are planted your roots take up the phosphorus and I come along and nip you off, and the phosphorus I get from you makes bone for me to build on; therefore, the more clover I eat, the better bone structure I shall have. Then when the cattle are sent to the packing houses the meat is sent back to Farmer Good for his family, while the bones are ground into more fertilizer to put on the land, so that you clover plants can make a better growth."

"Funny how dependent on each other we are, isn't it?" thoughtfully mused Clover.

Just then Billy Bee came along and stopped to rest on the horn of the big steer.

"Pardon me if I am a bit heavy, Mr. Steer, but I just had to stop and rest," apologized Billy Bee.

"Oh! That's all right. If you hadn't spoken, I wouldn't have known you were there," wearily replied Prince.

"Ho, hum! That's a good one," cried Clover. "Some folks have a good opinion of themselves, don't they? What are you doing out here in this clover field anyway? Don't you know that you can't get honey from us? It takes Old Bumble Buzzer to bore for honey here. You had better buzz along over to the other field, where my cousin White Clover is. He is more of your size," advised Clover.

So without more comment Billy Bee buzzed away. His departure did not awaken or in the least disturb Prince, who had now fallen fast asleep.

Many days of this kind followed. As the autumn days arrived, the translocation of starches from the stems and leaves of the plant to the roots began to take place. Clover was preparing for winter, and sure enough, one night a great white blanket of snow fell all over the big farm. Clover fell fast asleep, and did not awaken until one day in the spring, when he felt a slight commotion and opening his eyes he looked up, and there was Reddy Fox just digging away for all he was worth, preparing a home for him-

self and his lady love, who sat off at one side watching proceedings. Reddy would come backing out of the long hole in the ground and kick the dirt all over the immediate vicinity, then back again he would go and drag out another load of dirt. It was great fun to see Reddy work this way, and Clover felt that he was going to have an interesting neighbor for the summer.

In looking around, Clover noticed that many of his brothers had been killed by the winter, so during the coming warm days they all tried to expand themselves in order to cover the ground and make up the loss. Some of the plants had been killed by the clover-root borer, while later in May the leaf weevil ravaged the plants and destroyed the leaves. Then in July and August the grasshoppers came in thousands to feed upon the plants and if it had not been for the many friends of Clover, who kept control over the enemies, it is quite doubtful if he would have survived.

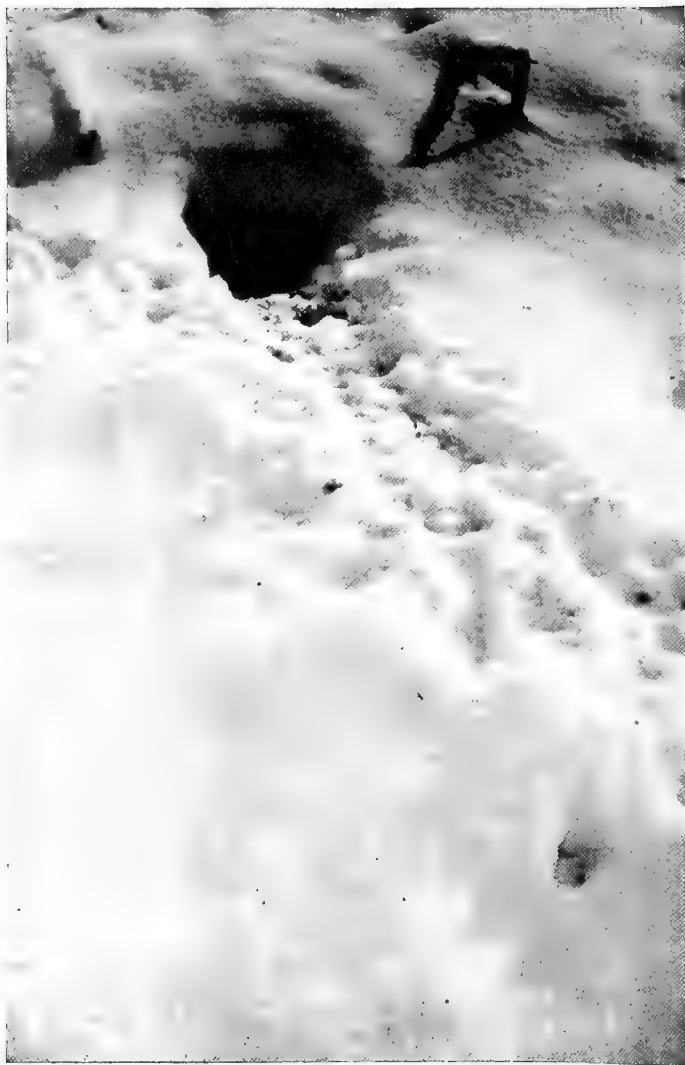
However, Clover came through the early spring in good shape, escaping many of the enemies that attacked other plants, and spent many interesting days watching the Fox family. For several days Lady Fox was not to be seen, and Clover began to wonder what had become of her, when one morning, as the

sun was shining brightly, she came out of the den which Reddy had dug for her, down deep in the ground, and following her were five little foxes with great ears and tails. At every little noise they would rush down the dark passage-way to their home, until they became accustomed to their new surroundings in the big field. Every morning now would see Reddy bring a duck, a chicken, or a rabbit for Lady and the children to feed upon. Sometimes a young turkey would be brought in. Then one morning Reddy brought in Mrs. Prairie Chicken. He told Lady Fox that he had surprised her on her nest, killing her before she could escape. How the foxes did fight over her out there among the clover plants!

All this time Old Bumble Buzzer, the Bumble Bee, had been building her nest near by, and now she had a fine brood of young bees that had been taught the art of taking honey. As they buzzed from blossom to blossom gathering honey, they also carried pollen on their feet from one blossom to another and thus fertilized the blooms so the seed would be created. Every morning Old Bumble Buzzer would get the children up early and say: "You children must work quickly, as it is necessary to cover all the blossoms to-day, because Farmer Good wants a fine seed crop and he is depending on you to make it."



Prairie Chicken Hurrying to Her Nest in the Clover Field.



Reddy Fox's Winter Home.



So one morning, while the foxes were fighting over an especially fine duck, they ran over Bumble Buzzer's nest, disturbing the tranquillity of the home by tearing a portion of its roof off. The Buzzer family came out in force, all in a perfect rage, and launched a bayonet attack on the young rascals. With howls of torture and cries of anguish the foxes rushed for their home, where they told Reddy Fox all about the Buzzer family being so rude, but old, wise Reddy just smiled and advised the young folks to leave the Buzzer family alone, as they did not belong to their set and never had been on speaking terms with each other.

Clover enjoyed watching all these incidents very much and also was glad to learn from Meadow Lark one morning that Farmer Good was going to leave this portion of the field for seed, while he was going to cut the other half for a hay crop. On account of the bumble bees being so early to nest and such great numbers of them, it would be advisable to leave half of the field for a seed crop, also take a seed crop from the second cutting on the other part of the field later in the summer. Therefore, Clover notified the roots to gather plant food to make the seeds. It soon had on each of its many stems several blooms which were filled with honey, that attracted the members of the Buzzer family. They soon brought

pollen from other blooms and fertilized our Clover perfectly, until every young seed pod was aglow with life and was rapidly being developed into a beautiful purple or yellow seed. One day after the blooms had begun to fade and the nights were getting cool Old Bumble Buzzer came along and stopped on the clover plant to see if the work had been well done.

"Well, old friend, our work is about over for this year, isn't it?" cordially exclaimed Clover.

"Yes. My family are about all gone, now. Soon you will be mowed down and threshed to be planted somewhere next year. I have located an abandoned mouse nest in the old dead cottonwood stump over by the fence, and as Farmer Good is going to put you clover seeds in that field next year it will be just right for me when I awaken next spring to come over and see you," answered Buzzer, as she clumsily sailed away into the red sunset of the autumn day.

"Well, good-by, Buzzer. Take good care of yourself this winter and here's hoping we shall meet over in the field across the fence next year," Clover called cheerily, as his good friend buzzed out of sight.

## HAPPY JACK SQUIRREL

**T**HERE! I'm going to call it a day," said Happy Jack, the big red fox squirrel, one evening in October. He was climbing the elm tree for the hundredth time that day to put another walnut into his storeroom, increasing the supply of nuts and acorns for his use during the coming winter. He had been a very busy squirrel the past few days. The early frosts had ripened the acorns on the big oak tree and the walnuts in the grove in Farmer Good's big front lawn, while across the road the hickory tree had been yielding up its harvest, as the autumn winds, shaking the branches, had loosened the ripened nuts in their shells and sent them rattling to the ground below.

Happy Jack had been gathering these nuts and acorns for several days. The acorns he stored in a part of the hollow of the big elm that was best adapted for the purpose, while most of the walnuts were buried in the ground near the base of the tree. The hickory nuts were too good for any squirrel to resist eating them on the spot, therefore he ate all

he could hold and put the rest within easy reach in his main living room in the elm. He also had stored sweet corn kernels, taken from Farmer Good's garden, and he felt that with the things that he could pick up later on he would be able to get through the winter quite well.

As his autumn work was over, he decided to visit around and call on some of his friends in other parts of the wood-lot on the other side of the road. So the next day he climbed up the big oak tree just by the side of the fence, to the big hollow limb which all the woods folk knew to be the home of Bobby Coon. He was hardly able to arouse Bobby from his slumbers, but after a great amount of rapping at the entrance of the home, and a lot of loud talking, Bobby got his eyes open enough to see who it was.

"Hello, Jack! You surely found me hard to waken, didn't you? I was out late last night and was making up for lost time. Well, Jack, what's on your mind?" queried Bobby Coon, as he arose and stretched himself, at the same time opening his mouth and showing a fine set of sharp teeth, when he gave a most satisfying yawn.

"I just ran over to ask you what the boys were doing along the road yesterday," answered Jack.

"Well, from up here I just couldn't tell what they

were doing, but from their actions it seemed to me as if they were planting something. If you will go down along the road where Prairie Rose and Sumac are, you will see where they were at work, but as I was not interested I didn't pay much attention to them," Bobby concluded wearily, for he was more interested in continuing his nap.

"Guess I will slip over and see just what they were doing," said Jack, as he ran down the tree.

Soon he was on his way along the road where Bobby Coon told him to go. Without much trouble he found the fresh spade marks, and with his two stout front paws he soon uncovered a nice, juicy crocus bulb. He had never seen one before, but as he took a bite of it he declared it to be the finest thing imaginable, so he began to dig for more, and at every place that had been freshly dug, Jack found from one to three crocus bulbs. He ate all he could hold, and then carried quite a lot of them to his storehouse in the big elm.

As he was making his last trip back to the crocus planting, he chanced to go near one of the flower beds and, noticing some freshly dug places, decided to continue his investigations. So again he dug down deep and found some very large juicy bulbs, much larger than the crocus, which he took great delight in eat-

ing. These bulbs that Farmer Good had recently planted were the celebrated Darwin tulips, imported from Holland, and as they were in abundance Jack felt very sure of his winter's food supply.

One day when he was very much absorbed in digging up one of these tulip bulbs, "Orang" the Airedale came across the lawn with a rush and just barely missed Jack as he sprang up the young hackberry tree. The tree was quite young, being only ten feet high, so Jack was just able to get out of reach. He was compelled to stay up there most of the forenoon, as the dog kept his eye on him constantly. However, Peter Rabbit ran across the lawn, attracting the attention of the Airedale, and while Peter was dodging him in the shrubbery, Jack climbed down and raced for his home in the elm. During the autumn, Jack had many such experiences, and finally began to enjoy them. He would climb up only a few feet on the trees just out of danger, then turn around and bark at the Airedale, calling him names to make him excited, affording great amusement for Jack.

One morning Jack awoke and, looking out of his front door, he discovered the whole world below wrapped in a great white blanket of snow. As it was his first snow, he ran anxiously down the tree,

to try himself out in the making of trails across the spotless white. He would run this way, then that, then stop and look back, to see how many tracks he had made. It was great fun, but after running for some time he became quite tired, and as he had not breakfasted he was rather hungry. The thought of walnuts and tulips came to his mind and he determined to get his breakfast at once. So, with the unerring accuracy of his race, he ran over to the spot where he had buried his walnuts, and, digging down through the three-inch snow and into the ground, he at once located the buried treasure. With the walnut between his teeth he climbed to the first limb on the walnut tree; then, with his great bushy tail curled over his back, while the morning sun was warming the big cold world, he breakfasted on walnut meats.

There were days during the winter when Jack had to depend on his storehouse, as the sleet was so heavy or the ground so frozen that he was unable to get food elsewhere. Almost all the woods folk were asleep on these days. The birds were all South for the winter, with the exception of Bluey the jaybird, the flickers, Blackie the crow, and a few others; therefore it was quite lonesome for Jack. He liked the snow for a few days during the early part of the

winter, but now he was getting terribly tired of it. He wanted to see spring come, to hear the song of the birds, and have the green leaves on the trees, so that he could lie out on the swaying branches during the warm days, and be lulled to sleep in the protecting shade by the gentle breezes.

Happy Jack's wish was soon realized, as the sunshine drove the snows away, and brought the birds from their winter resorts in the South.

"Hello, Cock Robin! My, I am glad to see you!" chattered Jack, as Cock Robin flew up into the big elm, all tired out after his long flight from Alabama.

"There is Diamond Bluebird, and I hear Meadow Lark. Spring is about here. I have been terribly lonesome without you boys. It seems like living to have you all back again. Have you selected the location for your house this spring?"

"What's that to you? Don't know that I would tell you if I had," Cock Robin retorted candidly. "I am rather suspicious of you. Blackbird Jim and Tom the catbird are telling some bad tales about you. They say that their homes were broken up last summer, and the evidence of their friends points to you as the home-wrecker," accusingly concluded Cock Robin.

"Now let me tell you something that will put an



entirely different light on this business," began Jack, defensively, "something that you don't know, and no one else for that matter. Fact is, I didn't understand it myself until you mentioned the trouble. Blackbird Jim and Tom the catbird had their nests in the red haw tree over by the fence, didn't they?"

"Yes," assented Cock Robin.

"All right, and the young ash tree leans over the fence with its limbs touching those of the haw tree, doesn't it?"

"Yes," agreed Cock Robin.

"Well, one warm day last summer, when I was lying on one of the limbs of the big maple, just getting ready to take a nap in the shade of my sleeping porch, I happened to glance down and whom do you suppose I saw crawling up the leaning ash tree? No one but Slippery the black snake. He crawled on over to the haw tree. Owing to the leaves, I couldn't just see what took place, but in a short time Slippery returned to the ground, and I could see from his appearance that he had filled up on something. In a few moments Blackbird Jim returned and was making a terrible fuss about something, but I never learned just what was the cause.

"However, I am not saying that Slippery broke up the nests, but I would advise your friends to be

more accurate in their information before accusing me of such things," concluded Jack.

"I will tell them as soon as they come north about this, and we will set this matter right," said Cock Robin, as he hurried over to the freshly plowed garden to get a mess of worms for his dinner.

"The idea!" mused Jack to himself.

However, Jack never did deny the charge, but he had laid the blame on Slippery in such a subtle manner that it was accepted by his accusers. The birds decided later that they would keep a close watch on Slippery during the summer but, nevertheless, Jack would come in for his share of attention.

The next few weeks saw the big lawn begin to bloom. The tulips, crocuses, and jonquils all added their bright colors to that of the green grass, all the birds had now arrived, and the mornings became a great festival of song. About this time the big farm welcomed a much needed rain. It commenced with a gentle shower, then settled into a general downpour.

"This is just the day I have been looking for," said Jack as he ran down to the ground.

Moving with the assurance of one who has had his program in mind for some time, Jack ran over to the old walnut tree under which he had a great quan-



Happy Jack Squirrel as a Youngster.



The Big Elm Observes the Planting of Memorial Trees.

tity of nuts buried quite shallow. These he removed from the place where he had put them last November, and, carrying them one by one out into an open space in the big lawn, he dug down quite deep with his strong front feet, then pushed the walnut down into the wet soil. He then raked the dirt back into the hole and stamped it down hard, jumping up and down on it with all his weight, so that it would hold the moisture; then he carefully raked all the dirt into the hole, and lastly covered it with leaves and grass, completing the operation.

During all this work he had been holding his umbrella over himself by curving his fluffy tail over his back. He kept the rain off to quite an extent, but although it was raining quite hard, yet it did not cause him to cease work for a moment. He had an important job, and he meant to do it. So back he would go to the walnut tree and bring another walnut out into the open space and bury it in the same careful manner.

All this time Bluey the jaybird had been sitting in the hard maple tree near by, watching Jack at his work. Finally, his curiosity got the better of him, and he flew down on the lawn near Happy Jack.

"Say, Happy, are you crazy? Burying walnuts

out here in the rain in May! Don't you know that walnuts are not good now?" advised Bluey.

"You have a lot to learn yet, Bluey," said Jack. "If I had been burying these walnuts to eat later, I would not have put them so deep in the ground. However, I don't ever expect to get any benefit from this work. I am not storing these for food, I am planting for future generations.

"There is a rigid law handed down to each squirrel generation that we must store our food in the fall. The part we do not eat during the winter must be planted in the spring during a rain, to grow more trees, in order to furnish food for our grandchildren and their children. Therefore, I am only observing the law of our race, and that's more than a lot of people do. This way I am providing for those who shall come after me," concluded Jack, who had not stopped work during the explanatory talk.

"That is a wonderful idea, Jack, and most commendable. Makes me think more of you than ever," said Bluey as he flew back to the hard maple to meditate over what Jack had told him.

Jack soon concluded his work and, after climbing the young red elm to eat some of the new buds that were quite good now, he decided to rest, as he had fulfilled his obligation to his race for the per-



(Above) Happy Jack having lunch. "I wonder who is 'calling."



"Keep your eyes on Slippery," said Jack.



The day before the robbery.



petuation of the food supply. While lying there in the red elm, after his dinner of elm buds, he fell fast asleep to dream of the days to come when the Golden Bantam Hybrid sweet corn would be ripe in the big garden, and just waiting for a tired Happy Jack Squirrel.

## THE ADVENTURES OF A KERNEL OF CORN

**H**HEY! Quit your crowding, stay over on your own row," complained one of the twelve hundred beautiful golden-yellow kernels of a high-grade ear of Reid Yellow Dent corn in Farmer Good's big seed house. It was a morning in January, after an especially restless night.

This fine ear of corn had been produced in Field No. 53. of Farmer Good's big farm, and early in October, before any frosts had injured the seed, he had husked this ear with thousands of others and placed them in the wire racks in this well-ventilated, furnace-heated seed house to remain there during the winter. As the moisture evaporated from the cob and the kernels began to shrink, the cob grew smaller and dryer, so that the kernels of the ear became very tight and crowded. This caused no little discomfort, and was the direct cause of the complaint by the golden kernel on this January morning.

"Look here, young fellow," spoke up a well-informed neighbor in an adjoining rack, "you should be thankful that you have such good health, and



Here Is Where Jack Found the Holland Tulip Bulbs.



Winter quarters for corn kernel. A heated, perfectly ventilated seed house.

that you are on a solid and firm ear, which denotes a healthy condition. Just look at the poor fellows on that rough, long-kerneled ear in the rack next to you. They are loose on the cob, and have a lot of room, all because they are diseased, and they will not be alive by the time the planting season arrives. Just you wait and see what happens to the two of you when Farmer Good starts to select seed for his fields," concluded the experienced ear near by.

About this time Farmer Good came into the seed house and began to get the corn-testing machines ready. The arrangement for testing the seed consisted of a large tray of sawdust on which a cloth was laid, upon which the kernels of corn were placed with the germ up. Then another heavier cloth was placed on top of the kernels, and after being well moistened with warm water, the trays were placed in the warm air of the germinating room with the temperature at eighty degrees. The other machine was a moisture tester, consisting of several trays divided into one hundred squares for the kernels of each ear. These trays were then placed in an incubator, where a damp, warm atmosphere was maintained at all times.

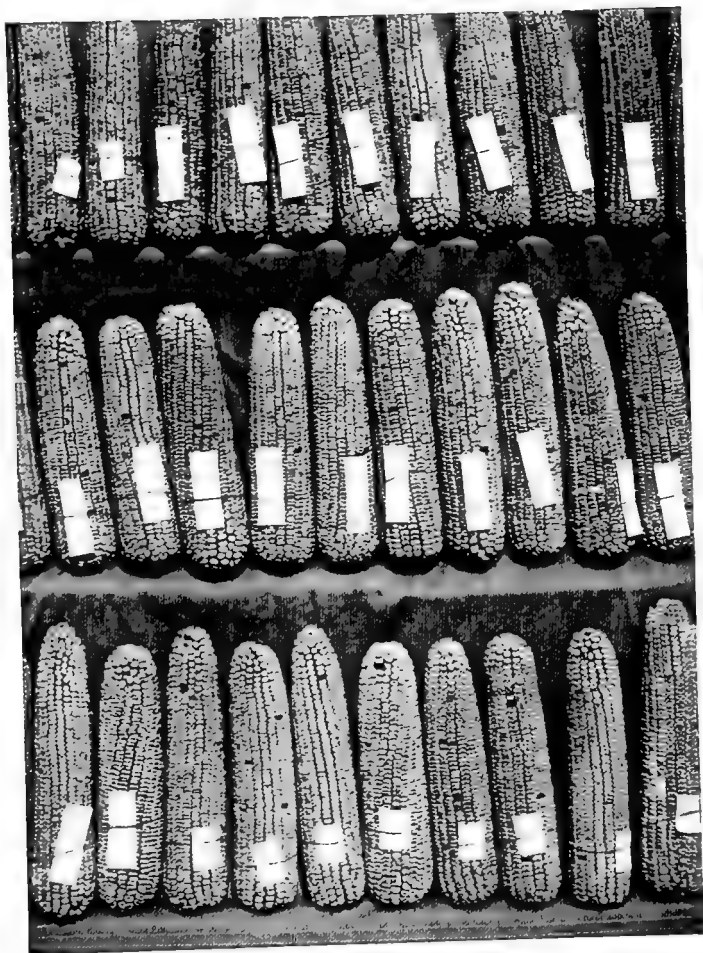
While the kernels of corn on the ears were watching the proceedings and the ears themselves were

listening to what Farmer Good was telling his men, our complaining kernel saw Farmer Good come direct to his wire rack, and begin taking out the good sound ears and placing them in a box. As soon as he came to the rough, loose ear he threw it into a basket along with some others, and the boy carried them out to Porky the hog. They might do for feed, but as seed they were worthless. When Farmer Good came to the big, strong, healthy ear on which our complaining friend found himself that morning, he placed him in the box at once, and said:

"There is an ear of corn that will make a record for itself, as it has every required characteristic. We will remember that fellow, for his number is 1548. There are fifteen generations of great producers behind him and this fellow is one of the best I have ever seen."

While the kernel was wondering what was going to happen to him next, Oldtimer, one of the best men on the big farm, lifted him from the box and with a knife removed ten bright kernels from the ear and placed them in the germinator on the warm sawdust.

"Gee! what a relief," said our complaining friend, as the adjoining kernel was removed, giving him more elbow room.



The right kind of individuals insure a great crop. Breeding ears of corn.



The Young Ears of Corn Bagged During the Hand Pollinating Operation.



He soon found himself reposing in another rack, with each section numbered to correspond to the numbers on the germinator.

After an interval of ten days, Oldtimer came back and took our subject out of the rack, after Farmer Good had taken careful measurements of the ear and noted in a big record book all its characteristics, recording as well, the perfect germination of the ten kernels. He then shelled all the kernels off the cob and placed them in a small paper sack with the number 1632 on it.

"Well, well! Here are a lot of my brothers I have never seen. Where have you been all the time?" asked our yellow kernel.

"Why, we have been with you all the time, but we were on the other side of the ear from you. I wonder where we go from here," said a timid, golden-headed youngster.

His question was soon answered by Farmer Good, who took the box with all the other ninety-nine sacks of kernels which were to be planted in the hundred-row breeding grounds of the most select ears, for the future crops of the great farm, and drove out to Field No. 21. Here Oldtimer had his planter ready, and the ground had been put into perfect shape. First, it had been properly fertilized with two tons

of ground limestone to the acre, and then, after a clover crop had been grown with a ton of rock phosphate applied, the clover stubble had been turned under, and this beautiful May morning found the ground just radiating health and vigor—just the place to put fine seed like these hundred ears.

Farmer Good then put No. 1 and No. 2 sacks of kernels in the planter boxes and Oldtimer started off planting across the field. Turning around at the other end, he put No. 3 and No. 4 sacks in the planter boxes and planted them in rows No. 3 and No. 4, returning. In a short time our friends in 1632 found themselves all in the planter box and Oldtimer planting across the field in rows No. 31 and No. 32. Just as our yellow kernel was wondering what was going to happen to him, he felt himself rotating around the bottom of the box, and then he fell down a dark passage-way with two other brothers into the dark, warm soil of the big farm.

“Well, boys, that was some experience, wasn’t it?” cried our friend upon recovering himself. “But I believe our real adventure is just about to begin.”

“Oh! this is the warmest and most comfy place I ever saw,” said one of the brothers. “It makes a fellow feel like taking a nap.” So, following the suggestion, the three brothers fell fast asleep under the



(Above) Preparing the Seed Bed at One Operation. (Below)  
Uncle Joe Cannon Inspecting the Tractor Plowing and  
Pulverizing.



How the Ant Destroys the Corn Plant.

comforting influence of the warm, moist bed in which they had been placed.

Under such conditions, time passes very rapidly, so while it seemed only a short time that they had been asleep, yet several days had elapsed, the moisture had penetrated the endosperm of the kernel, and had brought to life the embryo, so that the plumule, or young stalk, had pushed its head up through the warm soil out into the beautiful sunlight of a glorious May morning. The primary and secondary roots were pushing outward and downward all the while, gathering moisture and plant food to nourish the young stalk, that was now taking his first look at a beautiful world. He turned his head, and there at his side, just emerging from under a small particle of soil, were his two brothers.

"Hello, boys! Can you believe it? It seems only yesterday we were in that old, dark seed house, and now we are out here in God's sunlight, a place just made for boys. Oh, look, see! What's that coming on the run? Isn't he pretty? See him get that bug. Hello, Stranger, who are you?"

"Me? Oh, I am Bob White the quail. I am after some bugs. This is a great place for bugs, and many other things, which you will find, are of no use in the life of a stalk of corn. You boys just out, are

you? Haven't met any of the folks around here, have you?" asked Bob White.

"No. You are the first one that has called," answered one of the brothers.

"Well, let me tell you about some of these fellows you will meet later on, as it may do you some good.

"Now, I have a friend in Prairie Chicken," began Bob White. "He scratches around terribly sometimes and may kick dust in your eyes, but he won't harm you. Then Peter Rabbit will call on you, but he is a good fellow all right. He will be around at night, while Prairie Chicken and I will get around to see you while it is day. Blue Racer the snake will crawl up to you, but don't pay any attention to him. He won't hurt you, but I have to watch him, so that he doesn't find my nest. But I do want to warn you about Chuck the gopher. He likes corn better than most anything, and if you make much of a noise while you are young he will run over and dig you up. Then there is Jim Crow, who will fly down, yank you out by the roots, and gobble you up. We all hate him, as he is the worst robber on the big farm. He hunts for our nests, steals our eggs, and also pulls up the corn that Farmer Good has planted.

"Now I came over here to get a mess of corn-bill bugs. They are a little brownish black bug with a



Bob White, the Policeman, Hurrying to the Relief of Corn Plant.



Hand pollinating special strains of corn. The scientific breeding of the grain.



long snout, with which they bite holes in the young stalks to get the plant juice; then when the leaves open up later on they are full of parallel holes and the plant withers and dies. Old Chinch Bug, one of your worst enemies, is a dainty morsel for me. He is quite red and small when young, but as he becomes older, he turns black, and has a white cross on his back. They travel in armies and do a lot of damage. Then you will make the acquaintance of the ant and his cow, the corn root aphid. The ant stores the eggs of the corn root aphid over winter, and when they are hatched in the spring, the ant places the young aphid on the roots of the grasses and corn plants. The aphid sucks the juice of the young plants and a sweetish fluid is excreted upon which the ant feeds. You see it virtually gives milk for the ant, therefore it gets the name of the ant's cow. Then there is the corn-root worm, the army worm, and a lot of others that will ruin you for life if they happen this way, but Prairie Chicken, Cock Robin, Meadow Lark, Blackbird Jim, and some of my other friends and I will try to keep a watch over you, and in a few days I will have a fine little family, and will bring them over for a visit.

"But I especially want to warn you against old Cut Worm. A brown moth, that I like to kill, lays

her eggs on the grass blades in the fall, and the young larvæ that are hatched, winter over in the ground. Then when you young stalks of corn grow in the same soil, Cut Worm goes to work on you. He works mostly at night when you are asleep, so that you won't see him, and he just bites you off at the top of the ground. However, I hope you won't meet any of his folks. I will call around and see you every day. So long," called Bob White, as he ran down a row of corn to pick up a stray bug.

"My, my! But Bob White is an intelligent fellow, isn't he?" said our young friend. "He knows nearly everything, and is not stuck up about it either."

Just at this point the younger of the three brothers noticed a brown shape slowly crawling over toward him. It was about an inch long, with two stripes down its back—an ugly, wicked-looking thing.

"Say, boys, what is that thing? He is coming over toward me I believe, and I can't move at all. I don't like his looks one bit. I wish Bob White had stayed a little longer. See what a mean-looking head he has! Oh, he is coming right over here, and will soon be on one of us! Can't we wave our arms and get help, I wonder?"

So, putting this suggestion into action, the three

little stalks frantically waved their arms and soon became terribly excited. All the time the big villainous looking Cut Worm being unable to locate anything to eat during the night, had now become desperate and even the beautiful sunlight of this glorious morning had failed to make him hunt cover, so he was making his way slowly but surely toward the three young and tender plants. As he neared them he became more determined and they became more hysterical and desperate, shrieking with terror. Then suddenly Bob White's friend, Prairie Chicken, who was strutting on an adjoining hill, heard the disturbance, and swooped down with a great noise and rush of wings, just in time, as the big cut worm was opening his mouth to cut one of the young plants down.

However, Prairie Chicken made short work of him, then strutted around with his big yellow wind bags on his neck blown up nearly to bursting point, and his two long black feathers standing out behind like horns. Then he kicked up a lot of dust with his feet and made a nice wallow in the warm soil into which he settled himself to enjoy a dust bath. He was such a big fellow that the little stalk was afraid, but being so grateful for what he had done, he ventured to open the conversation.

"I am awfully grateful to you, Mr. Rooster, for saving my life. Bob White said that you were such a big-hearted fellow, and would help us out if we needed you, and we did need you so badly."

"Oh, shucks! Don't mention it. I needed that cut worm in my business anyway, to balance my ration. Any time you need me just wave your arms, and kick up a fuss and I will be right over. I have my family over on the little hill in the pasture," replied the big rooster, as he soared away on a pair of wonderful wings. Every morning the big rooster would fly over on the nearby hill and wake up the three brothers with his booming, crowing, and strutting, so they felt that they had a real friend close at hand at all times.

During the succeeding days and weeks the three brothers saw many amusing things, and also some real tragedies. It was a revelation to see the great quantity of chinch bugs, corn-bill bugs and the like, that Bob White would eat during a day. They never had a chance to get away. Then Stubby the field mouse became absorbed in digging out a nearby hill of corn and did not notice the stealthy approach of Blue Racer the snake, who with a rush gobbled poor Stubby with his powerful jaws and then spent most of the forenoon swallowing him whole.



Bob White and His Family Find a Night's Lodging in the Snow of the Corn Field.



A perfect hill of corn.

Little Johnnie Chipmunk silently slipped through the fence and began digging for a kernel of corn, as he felt that one wouldn't be missed from so many, when like a shot from the clouds came our watchful friend Prairie Hawk and speared poor Johnnie with his terrible talons and bore him away to his nest in the big cottonwood tree. However, Chuck the gopher made several raids on the adjoining hills and his powerful front legs soon dug away the soil and exposed the kernels, which he took great delight in eating without any further ceremony. He especially liked the hearts of the kernels, and would make a full meal on kernel hearts. He had a good helper in Jim Crow, who seemed to be afraid of no one but Oldtimer and Farmer Good; he would make a lot of noise and then tell everyone to watch him while he pulled up a lot of corn, and see how much damage he could do. He is a tough customer and doesn't care who knows it.

However, while the three brothers had enemies to contend with, yet these did not include weeds, for Farmer Good and Oldtimer kept the fields well cultivated and in fine condition, so that the brothers soon grew strong and healthy and with many good showers they became matured, healthy ears.

Then one day in October Farmer Good and the

boys began to husk the beautiful ripe ears on each row separately, until the row with our three friends was gathered, and upon weighing them Farmer Good remarked: "That's the winner all right—just as I said it would be. Just 123 bushels to the acre for row 1632 and as fine corn as was ever grown. We will take all these fine ears which have kept a good record for sixteen years, and plant our multiplying plots, which will insure us seed of the very best for all time."

"That will be great, won't it?" exclaimed one of the brothers. "We shall be back here next year, with our friends Bob White and Prairie Chicken."



## MARTIN AND HIS BIRD FRIENDS

HOME at last," warbled the lustrous purple martin, as he finished his fifteen-hundred-mile flight and alighted on the front porch of his own home, which Farmer Good had erected for him two years before, and which he had left last September for his winter quarters in the southern seas. Early in April he had left the Isle of Pines, a small island due south of Cuba, where he had made many friends whom he was continually telling of the attractive summer home he had in Illinois on the big farm. He invited them to come with him and spend their summer, and he enlarged upon the beauty of the house, with its twenty-four commodious outside rooms, all with the most modern conveniences, and the four special suites for the newlyweds who he hoped would join the party. He went into ecstasies describing the surroundings of his home, with its beautiful setting and the natural grandeur of the place, and also told them of the great number of bird friends of other families they would meet there, assuring everyone of the great

social advantages to be gained. He gave such glowing accounts of this home that he soon had quite a delegation on that April morning when he gave the signal and the entire party of home-seekers "hopped off" on their long journey to the north land.

They stopped a few hours in Cuba to rest their wings for the journey across the Gulf Stream, and then, when all were rested, they started across the great blue waters of that greatest of ocean rivers and finally pulled up on the southern shores of Florida, where they spent a few days in feeding on the mosquitoes of the Everglades. The following days were passed in making short trips across Florida, Georgia, and Tennessee, stopping to rest and feed as the occasion demanded, but all the time the leader was so anxious to complete the trip that he kept urging them on. They encountered some stormy weather in Kentucky, which delayed them somewhat, but as they crossed the Ohio River, the sun came out in the early forenoon of the last day of their trip and warmed the new world wonderfully of this beautiful spring day. The big purple pilot ordered full speed ahead and soon they sighted the Wabash River. This they followed for some time until they came to the site of old Fort Harrison, now a beautiful country club.

There was also a large martin colony here in two fine houses, wonderfully placed on the high bank of the great river, and commanding a view in all directions. The members of this colony had arrived the day before and were therefore resting from their long journey. As our party of tourists came in sight, a scout was sent to meet them, asking them to stop and rest a while. This they did and exchanged greetings and the experiences of the trip, but as they were now within fifty miles of their destination they all were anxious to be moving.

After resting an hour, during which time they thoroughly inspected the Fort Harrison Martin Club, they thanked their hosts most profusely for inviting them to stop and break the journey, then took a northwesterly course, and just about mid-afternoon came in sight of the big farm. It was easily located, with its many white buildings and the big brick house situated in a grove of giant trees, all adjoining a white concrete pavement that had been constructed through the country a few years before.

As the pilot circled the buildings of the big farm, giving his friends a first view of the place, he noted that a new house had been built for his family during the winter. This pleased him very much, for he had been worrying during the entire journey lest he

had more tourists than the former house could accommodate. But here was a new house, a Chinese pagoda. Just the thing for some of the newly-weds, off by themselves!

"And a new coat of paint on the old house! Now, folks, this is even better than I had hoped for. A new house, the old one painted, cleaned, and refurnished, and we are here in fine shape to begin a wonderful summer," shouted the big blue-purple martin, so proud of himself that he was nearly bursting with pride.

However, no sooner had they arrived than they were attacked by dozens of pugnacious English sparrows, who at once contested the rights of ownership. This seemed the only drawback to the pleasant surroundings, so the martins determined to stand together and drive off the sparrows. They eventually accomplished this, but not without a hard fight which took constant work for many days. In this they were aided by the people of the big house, who shot and trapped many of the sparrows.

Within a few days of their arrival they noticed that most of the other birds had arrived for the summer. Blackbird Jim and his crowd were already here and selecting home sites in the white pine, the



Martin arrives with his friends from the south-land.

A night watchman of the fields.



"Don't take liberties with the garden policeman"—a young cock robin.

Norway spruce and the firs. The doves, too, had arrived, and had taken up claims in the arbor-vitæ hedges and the Scotch pines. The bluebirds had been here, so Blackbird Jim said, but the sparrows had driven them away.

Cock Robin had been on the ground for weeks and had located his homes under the eaves of the front porch, the well-house, and the garage, and in the apple trees of the orchard, where he would be right on the spot to do the most good in destroying bugs and worms.

Jackie Jaybird was also building homes in the trees, along with Blackbird Jim, while Jenny Wren had been cleaning house for a week in the new wren house hanging in the flower garden. The flickers were present and were hurrying around picking up an ant here and there, while getting ready to drill a hole in the old elm tree, that had just enough dead wood to provide a home.

Reddy Woodpecker was seen dodging around on the telephone pole, which he had already drilled halfway through, so that he was now comfortably located for the summer.

The nuthatches seemed to be busy everywhere, and so did the warblers, thrushes, catbirds, red-eyed

vireo, black-billed cuckoo, and many others, all hurrying to construct their homes and attending strictly to their own business.

The kingbird was looking after his affairs out in the pasture, while the swallows were hurrying from the pool to the barn carrying mud to construct their nests, under the eaves of the building.

The night hawk was seen sleeping on a limb which was the same color as his feathers, awaiting the twilight when he would begin the hunt for his food, consisting of mosquitoes and insects which fly mostly at night.

The newly arrived martins liked their new friends, and felt that with such good companions their summer would be most pleasant.

"I am wondering whether with all these bird families located here, there will be enough food to go around," inquired one martin of Screechy the owl.

"Now don't worry about that. You will be kept busy to keep the insects from taking the place! Let me see, what is it you eat mostly? Mosquitoes and flies, isn't it? Yes, that is it," asked Screechy, and answered his question at the same time. "Well, the other birds eat other things, so they will not interfere with you, and we are all going to get together in a short time and make a coöperative arrangement,



whereby each family of birds will have a certain duty to perform and certain insects to destroy. When we call the meeting we want you there with everyone else," concluded the owl.

Within a few days the martins were all settled in their new quarters. The rooms were all assigned to the happy couples, and nest-building was begun at once. The martins did not take much care in the building of their nests. They were very poor architects; consequently, they had finished their work when Screechy the owl notified them one evening that at dawn the next morning a great meeting would be held and all the birds were to attend.

Early the next morning a great gathering was held in the big apple orchard—such a gathering as no bird had ever heard of before. Out there in the early dawn, just as the sun was peeping over the eastern horizon, with the apple trees in full bloom, and the sweet fragrance of the blossoms on the crisp morning air, with every bird great and small in the entire country in attendance, the wise old owl called the meeting to order and in his measured tones began:

"My Friends, we are called together this morning for the purpose of renewing our faith in each other, to establish greater coöperation, and to come to a better understanding with one another concerning

the laws and customs of the bird world that were established many, many years ago. There is a legend, so I am informed, that such a meeting as this was held at the beginning of the world, which every kind of bird attended. At that meeting a certain duty was given to each bird; each had his certain kind of work to perform. There was a reason for it.

“Man was created in the image of God Himself and placed in a beautiful garden with the birds, animals, and flowers, and with everything beautiful and harmonious. But it was not long before Man allowed sin to creep into the garden and into his life, and from that day Man has had his troubles, his worries, and his enemies. The enemies embraced many things, but some of the most troublesome were the injurious insects that came at the time Man was driven from the garden. It was then that the great meeting was held, at which each bird was given a duty to perform which would lessen the burden of Man. The duty that was assigned and the task that each bird assumed at that memorable meeting is the same to-day as then, thousands of years ago, and each year for the benefit of the young birds who were born only the previous year, a meeting like this is held, to impress upon them the importance of



Bluey and Scrappy Have Breakfast with Reddy Woodpecker.



Cock Robin Wonders How It Is That Four Youngsters Can Eat So Much.

keeping the faith, and the great necessity that each bird family should perform its work well.

“Now the birds were separated into various divisions. There were those who were to feed in the air on flying insects, and others who were to feed on the ground on worms and insects; others to feed in the trees on tree insects; others to feed at night in the air; others to feed at night on the ground; others to feed on the water, and still another division, whose food was to be the seeds of weeds. Each bird was created in a manner that was peculiarly adapted to his division and to the kind of duty he was to perform. He was also endowed with very rapid respiration and high temperature, so that the amount of food needed in proportion to his size is far in excess of that required by any animals. This enables him to destroy great quantities of insects, and thus to be a great benefactor to mankind.

“The birds that were to feed on flying insects were especially constructed for that kind of work, as were, indeed, the birds of every division for their respective tasks. These birds, which have small bodies, with great wing-spread, are the martins, swallows, kingbirds, and others of this kind, and mosquitoes, flies, moths, robber flies, and flying beetles were appointed for their food. The birds that feed on the

ground are the robins, blackbirds, thrushes, meadow larks, crows, quail, prairie chickens, and others, and their food consists of grasshoppers, caterpillars, cut worms, wire worms, corn-root worms, Hessian flies, chinch bugs, army worms, May beetles, click beetles, bill bugs, and many other insects. The birds that feed in the trees on tree insects are of two kinds: first, the warblers, catbirds, thrushes, cuckoos, cedar birds, vireos, chickadees, blue jays, and orioles feed on caterpillars and all leaf-eating insects, and second, the woodpeckers, nuthatches, flickers, and titmice take care of the insects and worms that bore into the bark of trees, such as apple-tree and peach-tree borers. The birds that feed at night in the air are the night hawks, eating mosquitoes, moths, and flying ants. The owls—and there are many varieties—feed on ground mice and small animals at night. The birds that feed on the water are the gulls, ducks, geese, cranes, bitterns and others. They also are perfectly adapted and equipped for the work that they are to perform. The birds that take weed seeds for their food are quail, prairie chickens, doves, and snow birds, while the birds that look after the insects of the garden are the wren, robin, chirping sparrow, song sparrow, and quail. Those which feed in the daytime on the field mice, gophers, and small

animals are the many different members of the hawk family.

"Now we are all here for a purpose. We have a duty to perform. If we do not prove ourselves worthy of protection by doing a kindness and fulfilling the mission for which we were created, then we are regarded as pests and fit subjects for destruction. So let us have coöperation. Let each fellow work with his neighbor in bringing about the desired result, and keep the faith of that first great meeting centuries ago." Saying this, the wise old owl adjourned the meeting just as the bees came to work, gathering honey from the blossoms of the apple trees.

"What am I to do?" exclaimed Humming Bird. "You have not mentioned me at all."

"Why, bless you, we had overlooked you! But you really have a very important mission, that no one else can perform. You are to gather the honey from the lilies and other large flowers in the garden. In doing this you will carry the pollen from one to another, thus fertilizing the flowers, so that they will be perpetuated from year to year," answered Screechy the owl.

Then with a great noise the birds flew in every direction to carry out instructions. Chattering and

singing as they went, they constituted a great aërial army for good if properly directed.

Martin began his work at once, as he flew out over the big herd of cattle and began gathering in the cattle flies by the hundreds. Later in the day he feasted on mosquitoes, and in the summer he took a great fancy to the yellow cabbage butterflies, that lay their eggs on the cabbage and cauliflower.

Cock Robin made a rush for the garden and began tearing out cut worms from the roots of the plants, and it looked as if he would never get enough.

Prairie Chicken and Bob White flew back to their wheat field and began again to rid the field of Hessian flies and chinch bugs, while back in the apple orchard Reddy Woodpecker yelled, "Use your head, fellows, use your head," as he drilled through the apple-tree bark into the cocoon of a codling-moth and began his belated breakfast.

Everyone began work with a will. Every protection had been afforded the birds by the owner of the big farm; consequently they were all quite happy as they began their successful campaign of destroying millions of injurious insects during the summer. This coöperative spirit of the birds made it possible for the farm to produce great yields of grain and it was this spirit of coöperation and brotherly love,





The Enemy of the Birds. Always Hungry After His Nap.



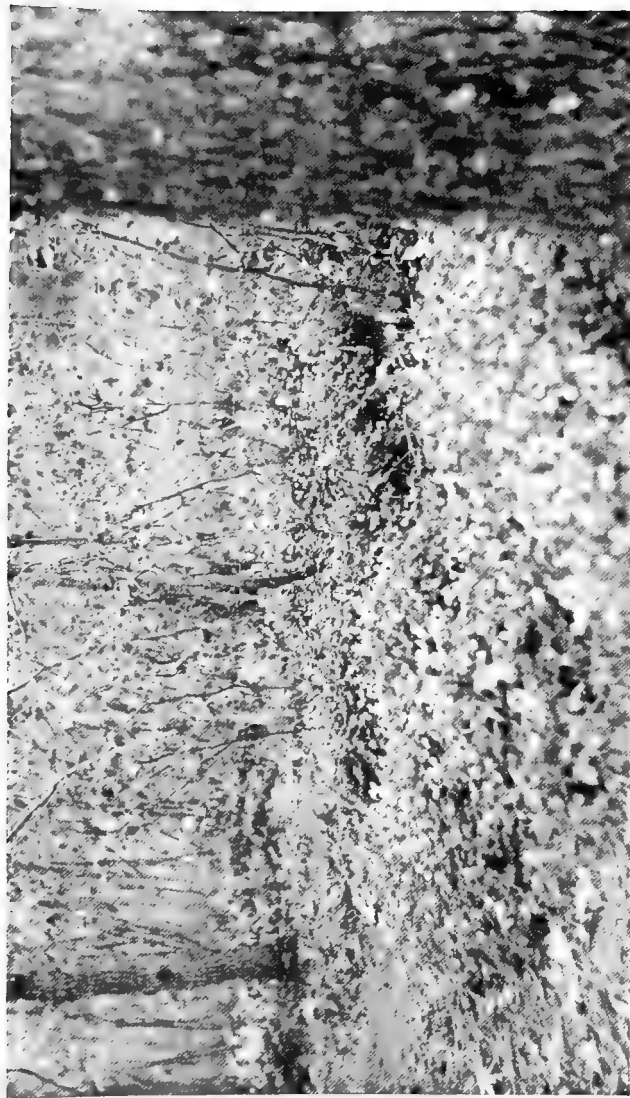
"Find me"—said Hummingbird, resting after taking the honey from the canna flowers.

which prevailed on the big farm, that brought the martins and their friends back each spring to mingle with one another in contentment amid the apple blossoms of the orchard.

## PRAIRIE ROSE

DOWN a long, lonesome, winding woods road that led to a primitive bit of forest we find the lovely Prairie Rose, idly passing the early spring days in a shaded ravine which led down the hill to the little creek. The prairie rose, the sumac, and the sassafras were awakening from their long winter's nap on this clear March morning, and as they stretched and shook themselves into consciousness on the sunny side of the little ravine, Prairie Rose wondered if his friends of the late summer were still about. In looking around he soon spied Happy Jack the fox squirrel digging up a walnut which he had buried last November. Also Johnnie Chipmunk was under the great oak tree, searching for a stray acorn which might have been overlooked in the early fall. Feeling a slight movement on one of his long vines, he glanced down, and there was Peter Rabbit just stretching himself and getting ready to take another nap.

"Hello, boys! My, I am glad to see you all again! I surely did have a long nap," said Prairie Rose. "You are all here but Bob White. Where is he?"



Wild Flower kept Prairie Rose company.



The Old Home of Prairie Rose and the Winding Road Leading  
to It.

"It is like this," Happy Jack the squirrel replied. "Bob White had a friend call on him last fall who told him about a wonderful part of the country, where a big farm was located which had a lot of wheat stubble left over it that was just loaded with good things to eat—shattered wheat kernels and a lot of bugs and worms, with every prospect of a plentiful supply this spring and summer—so Bob White took his family and went along with him. Couldn't resist the temptation," concluded Happy Jack.

"It's too bad that some folks can't be satisfied with their own surroundings," said Sumac. "This is home to us and we would feel terribly out of place anywhere but on the side of this little ravine."

"Well, that may be, but don't you ever have the desire to know what the rest of the world is like and to see if there aren't great improvements over our own locality?" questioned Prairie Rose. "Seems to me that I would like to see something of the rest of this country, as I know that farther up the creek is an entirely different world from what we have and I don't blame Bob White one bit for wanting to get away. I hope some day I shall be able to see something different myself, but just now there seems to be little hope."

"About the only excitement I ever experience is

when one of the boys from up the creek comes down here and digs up some of my roots to make tea," commented Sassafras. "This is about the season, too. Last year they woke me up with their digging and cutting, but so far no one has been along. Why! look at White Elm! He has had an accident—lost one of his best limbs. I wonder what was the cause," Sassafras went on.

"Well, you see it was like this," began Peter Rabbit, sitting under Prairie Rose. "Bobby Coon had his home in that big limb, and one dark night he came rushing home, and just at his heels was a pack of hounds and some men from up the creek. Bobby ran up to his home in a hurry, but the men, with the aid of a ladder and ropes, climbed up White Elm and cut off the limb. Bobby came crashing to the ground, and the fall broke Judas Tree, Gooseberry Bush, and Young Hickory, and in the confusion Bobby made a hurried escape and got to his old friend Big Oak, which was too big for the men to cut down or to climb, so they left Bobby alone. It was a terrible night, and every time we hear a dog howl or a hound bark, we all think of Bobby and his narrow escape. It has shortened the life of White Elm to lose his limb and he is feeling terribly over it."



"Listen," said Sassafras, "I hear a wagon coming, and men talking. I expect they are going to make me a call. Yes, it must be, as one of them came to see me last year." Just at this point two men drove up to the edge of the ravine. After getting out of the wagon, as soon as they saw Prairie Rose, they took spades and began to dig carefully around the roots of the bush. As soon as they had it loosened, they wrapped burlap sacks around the ball of earth and roots, and then, after putting Prairie Rose in the wagon, they drove away. All this time the other trees and shrubs were just dying of curiosity.

"What on earth do those fellows want with Prairie Rose?" acidly remarked Sassafras. "I can see what they would want with me, but that rose bush doesn't taste good; neither does it contribute anything to anyone that I can see."

"Well, Prairie Rose has a beautiful bloom, you will have to admit, adds beauty to the community in which he resides, and gives protection to his animal and bird friends," ventured Sumac.

"Evidently he has some attractive characteristics to be the only one selected. He is not going to be destroyed, because those men were very careful in digging him up, and it is my impression that his life

from now on will be brighter and be more appreciated," was the sage comment of the flowering dogwood tree.

The summer passed and winter came on, without the mystery being solved, yet the disappearance of Prairie Rose was the favorite topic of conversation of the trees, birds, and animals of the primitive forest. Many rumors were heard concerning the fate of the beautiful bush, but no definite information came, and finally all the shrubs, plants, and trees closed their eyes one cold winter night, and went into their long, long sleep.

Just about a year after the day when the vacancy on the hillside was created by the removal of Prairie Rose, and the warm days of spring had stirred to life the trees along the creek, a wagon with the same two men drove up to the edge of the ravine, and began inspecting the various trees and shrubs.

"Oh, look!" cried Sumac; "the same men are back again. I wonder which one of us will figure in the mysterious disappearance this time."

After looking around quite a while the two men came directly to the group of shrubs in the ravine and began carefully to dig up not only Sumac but Sassafras, Dogwood, Judas Tree, and many others. The men were very careful, in taking our friends up,



Shadows and Sunshine near the Home of Prairie Rose.



Bob White Seeks Protection from the Winter under Prairie Rose.

to see that the roots were not injured, and as soon as they were taken out of the ground they were placed in the wagon, with leaves and soil packed around them to keep the air away, so that the roots would not become dry. After everything was loaded, Sumac looked around and noted that their good friend young Hard Maple was not taken, but was left all alone on the side of the ravine, his limbs drooping, and looking very lonesome as his friends were being carried away.

The trees in the back of the wagon, all crowded together, full of apprehension, and very much mystified, were speechless, as they had no idea what the future held for them. However, they ascended a long winding hill, then down a rough woods lane that led through the forest, and as they went bumpy, bump, bump down the old road, it was a trying experience for some of the more timid ones.

Farther on, the forest began to disappear and the country to become more open. Broad fertile fields appeared with men working in them, and beautiful blue grass pastures, with grazing herds under the spreading trees, made an entirely different world.

But the best of all was the type of road they were riding on. It was a beautiful white pavement, smooth as could be, and they traveled along so easily

that it was much more of a comfort than riding down the old timber lane. After riding on this highway for a few miles, going alongside fertile farms with beautiful homes, they soon came to a very picturesque place. Here the men drew their horses to one side of the road and came to a stop where many shrubs and trees were growing. As they did so a great covey of Bob Whites flew out from the protecting bushes and Sumac thought he saw a resemblance to one of his former friends, yet events were moving so rapidly that he soon forgot the incident.

The men took their tools and began digging great holes in the ground at the side of the road; then they came and selected Sumac, Dogwood, and the others and placed them in the ground, carefully putting the soil around the roots, and then watering them well.

After all this had taken place and consciousness had returned to Sumac, he heard a familiar voice shouting to him, and looking down at his right whom do you suppose he saw there smiling up at him, just shaking with gladness and beaming all over?

"Well! Well! Here's where you have been all this past year, is it? Oh, boys! Here is our good friend

Prairie Rose," Sumac called out. "Say, isn't this great? And to think we are all here together again in this beautiful place! I wonder who ever thought of using us to beautify the roadsides, when there are so many other flowers and educated shrubs and plants in use," said Sumac, thoughtfully.

"I will tell you all about it," began Prairie Rose. "Last year when I was brought up here the learned professors from the University were here and told the other men in my hearing that it was the plan of the Dean of that great College of Agriculture to develop rural roadside planting. So, through the Landscape Department of the University, this system of road beautification, 'The Illinois Way,' was adopted. This mile of roadway with its beautiful pavement was the first to be selected, as the one to be improved under this system. By using the native flowers, shrubs, and trees, the roadway is beautified and we add to the pleasure of those who pass this way. Here you will see the new machines that people ride in, that we never heard of down by the creek in the forest, and if you are observing you will have a chance to see many interesting things in the course of a day."

"It's too bad that Hard Maple couldn't have

come along. He looked so lonesome," lamented Sumac.

All at once, with a rush of wings, Bob White and his family came back to see what was the cause of all the commotion, and then a general reunion was held, for Bob White had not seen these friends for nearly two years.

"This is a grand place," exclaimed Bob White. "Farmer Good feeds us and protects us all the while, and will not let anyone hunt us with guns and dogs. He will surely take good care of you and you will be very happy here, with all your old friends, and you will make a lot of new ones, too."

Two years had elapsed. Our friends had developed into beautiful shrubs and trees, all very happy and contented, when one day the boy who had first found Prairie Rose and planted him, but had been away for two years, came and dug a hole near the fence, on the other side of Prairie Rose.

All was excitement at once. What could it all mean, and who was to be the new arrival? Then again the wagon drove up and who do you think was taken out and put into the place that was ready? No one but Hard Maple.

"Hooray for the U. S. A.," yelled Sumac.





Prairie Rose in good environment makes wonderful development.



The Illinois Way—Beautifying the Highway. Prairie Rose Did It.

"That's right," cried Hard Maple. "That's why I am here. The good old U. S. A. won the war, and one of the boys on the big farm here helped to do the business. Therefore I am now a memorial tree, planted here to perpetuate and keep alive the memory of this boy. I am only one of sixteen memorial trees which are planted along this highway.

"You see we are all meant for some purpose. If we only do our duty, have patience, are cheerful and contented, and exert ourselves to the utmost to help not only our own condition but that of others as well, we shall all add our bit to making the world better and more beautiful," sagely concluded Hard Maple. "Now let's all stand at attention while Bob White whistles 'The Star-Spangled Banner.'"

## THE HACKBERRY TREE TELLS HIS STORY

**H**ELLO, Sonny! When did you arrive?" asked Big Hackberry Tree of a new arrival that had just been planted on the other side of the fence.

"I was planted here early this morning. Perhaps before you were awake. I am a Memorial Tree," replied Young Walnut Tree. "Happy Jack the fox squirrel planted the walnut a few years ago from which I grew, and as I later became an attractive looking fellow, I was selected for this purpose. I expect to grow up to be as big a tree as you are, but that will take a long time. I wonder how old you are, anyway," continued the young sapling, as he looked up at the great tree, which stood in the center of the beautiful road with a concrete highway built on either side. The great tree, fifteen feet in circumference and towering a hundred feet in the air, stood like a sentinel and guard over the entrance to the big farm.

"Well, young fellow, I am quite a little over one hundred years old, as near as I can remember. When I first started to grow here, this country

looked mighty different from what it does now. You say that you are a Memorial Tree. Now just what is that?"

"During the Great War sixteen of the boys who had worked on the big farm, and who were working here at that time, were engaged in the task of whipping the Huns. Some of these boys returned and are again at their work, while some of them will never come back. The owner of the big farm decided to perpetuate the memory of each one of these boys by planting a tree in his honor; therefore we are planted here this morning for that purpose, each one representing an American soldier and an employee of the big farm," explained Young Walnut.

"Well, tell me. Did the boy you represent come back?" queried Big Hackberry.

"Yes. He was brought back. He made the supreme sacrifice. He was killed in action, October 10, 1918, in France, in an early morning attack by the American Army, but he was recently returned, to be buried in his native land," quietly explained the Memorial Tree.

"Well, I hope you will grow to be a great tree, just as the boy you represent grew to be a great fighter. I can think of no more commendable way of honoring an American hero than planting a fine tree to

his memory, and I wish you a long life of happiness and usefulness," said Big Hackberry.

"I can remember the time when I was young like you, before the white men came to this country. The Indians then roamed these forests and prairies unmolested. Their campfires many nights were lighted just where you are now standing. This stream that now nearly runs dry in summer was quite a small river then; it never became dry or even very low until all the forests were cut away. In the summer time this high bank along the stream was a favorite camping place for the Indians when they came here to fish. The finest kind of fish were in all these streams at that time and the Indians were not the only fishermen.

"In the daytime the kingfisher could be seen sitting over the water on a dead limb of the big oak tree, and all at once he would drop like a shot, to emerge from the water with a wiggling chub. Then, as he attempted to return to his lookout perch on the oak tree to partake of his feast, the fish hawk who had been watching the proceedings would rush him, compelling him to drop the chub, which would be caught in mid-air before it reached the water. At night the mink, otter and marten would slink along the banks of the stream, carefully working their



The Great Hackberry Tree in the middle of the road. The sentinel for a century.



"I've seen the bob sled parties at Christmas times," said the Big Hackberry Tree in the middle back ground.



way along the old sunken logs lying along the edge of the water, and, locating the catfish, pike, bass, and suckers that had stopped in the shadows of the old logs, they would have no trouble whatever in having a fish dinner any evening. The great blue heron would wade out on the shallow sand bars in a stately fashion, and become a motionless statue in the rippling waters. Suddenly the long blue neck would flash like a coiled spring and a shining minnow would come from the water on the points of that spear-like bill.

"The wild ducks, that now go to the wilderness of the north to rear their young, found the same conditions here then, and in the autumn the streams and lakes were covered with wild fowl of all kinds. Prairie chicken and quail seemed to be everywhere along the edge of the timber, and in the early morning the booming of the big prairie roosters could be heard in the distance, as the hum of many swarms of bees.

"In the mornings the wild turkey gobbler would lead his flock from the timber out to the edge of the prairie to feed on the grasshoppers and the crickets, the wild strawberries and the wild grapes which grew in abundance near the alder thickets on the hillsides. They would return at night and

fly up in the trees to roost, thus avoiding the night prowlers, such as foxes, wolves, wildcats and others which, intent upon their evening meal, slipped silently across the moonlight patches to the sheltering shadows formed by the bushes and trees.

"The lordly buck deer, who would lie in the shade of the protecting hazel bushes during the day, would lead his family at nightfall out to the grassy pastures that stretched miles to the north and west. The wolves would at times follow hot on the trail of the deer, but while the fawns were so young that they were unable to escape, their mothers hid them before leaving the timber, and as they gave off no scent whatever while young, the wolves were unable to locate them. The little fellows would remain perfectly motionless while the wildcats and other dangerous enemies would pass by within a few steps, unsuspecting that such a wonderful dinner lay so close at hand.

"Those were wonderful days. The Indians of various tribes would meet here under these big trees for the purpose of dividing the territory for hunting and fishing. They would have games in the daytime and dances around the campfires at night. Speaking of great fighters reminds me of an experience I shall never forget.

"In one of the tribes that lived on the banks of the stream here, there was a beautiful maiden, the daughter of the chief. She was very much in love with one of the young men, one of the great hunters of the tribe. Many times he carried her across the stream, with the water shoulder deep, to the other side where he picked wild strawberries for her in the spring, raspberries and blackberries in the summer, and hazel nuts in the fall. They became in love with each other.

"One day a visiting tribe came to hunt and fish here, and to establish friendly relations. In this tribe was a young warrior, the son of the chief, who fell madly in love with the maiden at first sight. Within a week he had made such ardent love to her, and had deliberately crossed the path of our mighty hunter so many times, that serious trouble was imminent.

"One evening, while the whole world was wrapped in gorgeous moonlight, the three met as if by appointment on that high bank by the stream and there under the big walnut tree arranged to decide whether the hunter or the warrior should take the Indian maiden. It was left to her to decide, so with the sportsman instinct of her race she said that the one who first swam the river and

returned to her with a bough of the flowering dogwood that grew on the opposite bank could claim her as his bride. The two mighty men—the great kind-hearted hunter, and the sinister, ferocious looking warrior—plunged into the stream swollen by the recent spring rains, and, battling with the strong current, began the race to the opposite shore and return.

“The hunter, with his greater experience, by keeping his body at an angle with the current was able to forge ahead of his opponent and was soon seen climbing the opposite shore and cutting off the cherished token of victory. The beaten warrior was not far behind, and had not as yet admitted defeat, so when the hunter plunged back into the swirling waters with the dogwood blossoms, he found himself face to face with a villainous red-skinned warrior who, with his knife in his teeth, was contesting his return. With determination and revengeful defeat written on his face, he made a rush at the hunter, who avoided the first thrust, but while the token of victory he was carrying in his teeth meant life’s happiness to him, yet it was the immediate cause of his undoing, for it momentarily blinded him just as the enraged warrior made the second and

successful lunge at him, when he drove his hunting knife deep into the lithe body of the hunter.

"With his life-blood mingling with the turbid waters of the river, he released his hold on the spray of flowers. This the warrior quickly seized and swam back with it to the waiting Indian maiden. As she saw this man returning to her with the token of victory, when she had seen her lover climb the opposite bank in the dim moonlight and cut it from the tree, she knew at once that the commotion in the water at the farther edge of the stream and the fact that only one came back, meant that something terrible had happened. So walking out into the water knee-deep, she met the warrior, who gave her the spray of dogwood blossoms, and, quick as a flash of avenging lightning, she drew from her buckskin tunic her own hunting knife, and drove it deep into the warrior's treacherous heart.

"Thinking that possibly she might find her lover, she followed the stream down beyond the big bend, and there, lodged against a log drift, she found him, more dead than alive. With the blood of the hunter and the warrior mingling with the moonlit waters of the stream, the Indian maiden proclaimed the name of the river to be the Vermilion, a name which

has remained with it to this day. She swam to him and by superhuman effort managed to get him to shore, and eventually to camp, where she related the circumstances which precipitated a great battle between the two tribes. They fought for days and days all over this country and it finally ended in the visiting tribe being practically wiped out. I was quite young at the time, but it was so terrible and so treacherous that I remember vividly every detail of those exciting days.

"A few years later the white men came to this country and after several battles with the Indians they drove the red men out, leaving the white man in possession of this beautiful country.

"Then the cattle-men of Virginia and Kentucky followed the pioneers into this locality and one day, about ninety years ago, a man riding a large bay horse stopped to rest under my very branches, that afforded such good shade.

"It was very warm, and from the appearance of his horse I judged he had come a long way. He was a tall, straight young man, keen-eyed, and seemed to be much interested in his surroundings. It was the first time I had ever seen a man ride a horse with a saddle—which he had removed to allow the horse to rest—as the Indians all rode bareback.

After walking around quite a while, going to the north some distance, he returned to his horse, now fully rested. After adjusting the saddle and affectionately patting him on the neck, he mounted and rode away in the direction from which he had come.

"A few days later, one beautiful afternoon the same man on the big bay horse returned and with him was a young woman mounted on a wonderful black mare, whose glossy coat shone like ebony. The two young people seemed to be very much attached to each other, and also to be intensely interested in the new and beautiful country. They rode all around, looking the country over from different points, and just before leaving they stopped directly where you are now planted. There in the light of the October sunset, as the golden and crimson rays filtered through the leaves of the hard maple tree and lighted up the gorgeous brown hair of the young woman, whose poke bonnet had fallen to her shoulders, the young man rode to her side and, placing his arm around her, drew her to him in a long, loving embrace. At the same time the big bay horse and the beautiful black mare affectionately rubbed their noses together with a mutual understanding. Only a few days elapsed when sev-

eral men came and began building a house, cutting trees and hewing out the logs and soon they had a home constructed that is a part of the cottage you see across the road, although it has been rebuilt many times.

"Then followed years of new activities. The road which had been cut through the timber from the east was extended farther west. More houses were built. Prairie was broken by plowing with three and four yoke of oxen. Grains were planted and harvested. Cattle were raised in droves of thousands, that grazed all over the prairie in summer and sheltered in the timber during the winter.

"Now, I suppose you would like to know who the young man and woman were. Well, they were the grandfather and grandmother of the man who owns the big farm—the man of the third generation—and during the winter the other grandfather, who lived just a few miles away, would come over and they would then go deer hunting for the winter's supply of venison. It was great to see these two young men, with their sled, drive out through the timber over the freshly fallen snow, and return the next day with three or four fine buck deer shot with the long old-fashioned flint-lock rifles made by a member of their own family. The venison was



cured and smoked just as the beef is cured and smoked at the present time, and for Thanksgiving and Christmas dinners they would shoot wild turkeys out of this very tree.

"Years went by quite rapidly, during which time the country was developing. This road was extended many miles west, and people were all the while driving on either side of me. Many stopped here over night in their pilgrimages to the Far West to allow their horses to rest for the next day's journey.

"Later on, the second generation took charge of the farm, and then conditions materially changed. A great house was built, and barns to house the horses and cattle were erected. More land was acquired and put into cultivation, while thousands of cattle were driven to market along this very road.

"Then years later the third generation came into being one day in the big house. I can see him now as a small boy with his grandfather going along the stream, the same stream and the same place where the Indian warrior and hunter raced across the river for the Indian maiden. The great pioneer and deer hunter, aged and bent, carried the fish poles, while the young fellow was trotting along behind with the can of worms, stopping at the deep hole at the roots

of the old sycamore tree, then joyously returning for dinner with a long string of catfish, pike, and bass.

"Other years followed. The first and second generations had passed to their reward. The third generation is now in active control of the big farm and has been very energetic in beautifying the roadways and creating a permanent pavement that you see. When this wonderful pavement was constructed I felt sure that I was going to lose my life and, had it not been for this man of the third generation, I would not be here to-day. The men in charge of the work insisted that I be removed from the center of the road, but my friend said that so long as he lived on that farm enough men could not be crowded around that tree to take it out. However, he said that if they would leave me he would build a double roadway around me, creating an island which he would plant to beautiful shrubs, and that he would also beautify the entire roadway for a mile in length. This has been done, as you see, and has resulted in making one of the beauty spots of the entire country.

"Look there, young fellow," called Big Hackberry to the young tree just planted, as this man of the third generation, his wife, and the three children came strolling across the pavement to the beautiful

lawn under the great trees. "That's what I call a picture. There goes the third and the fourth generation. You and I will see the fourth, the fifth, and succeeding generations come and go here on the big farm, and I am wondering if the coming years will be as full of interesting events as those of the past have been.

"Look at our friend's wife, the pretty mother of the fourth generation, as the evening sunlight plays on her rich brown hair. She reminds me very much of the maiden on the beautiful black mare that day, when ninety years ago the two young people pledged each other their love in this wilderness garden, and to think I have seen all this transformed into a thing of beauty and a joy and happiness to everyone who comes this way.

"Don't tell me I haven't lived in a wonderful age, young fellow! I have seen the Indian with his two poles hitched to his pony dragging his tent and his blankets to his places of sacred worship. I have seen the first generation go on horseback and by sled to the country church. I have seen the second generation go to church in the carriage and phaeton, and now we see the third and the fourth generations going to the same church in high powered automobiles.

"But recently we have seen our friend whirling a mile high in a great airplane, looking down on us as the eagles did during the time when the Indians were in peaceable control and possession of all this country, and I wonder what can possibly happen during the next century to equal the great events of the past.

"However, young fellow, I really believe you are living in the golden age; that the days of great opportunity are just ahead; that the wonders of the past century will be insignificant in comparison to what we shall see during the next, and just because you have been planted to represent a boy who fought to make the world better, that spirit, that *Right shall triumph over Might*, will make this nation a God-fearing nation of happiness and prosperity, the greatest nation on earth."



I saw them build the stone fence, plant the shrubs and flowers, build the wonderful pavement  
and plant the Memorial Tree for the boy who was killed in France.



The Big Tractor Getting the Field Ready for the Winter Wheat Crop.

## THE ROMANCE OF THE WHEAT KERNEL

“WHO said it was time to get up? What’s all this disturbance about, anyway?” angrily exclaimed Wheat Kernel one cold morning in February, as he slid down the side of Farmer Good’s big wheat bin.

He had been placed there last August, during the threshing season on the big farm, had been sound asleep all winter, and this morning had been rudely awakened by the men as they started to reclean the wheat for seeding purposes. He was thrown into the fanning mill, dropped through two screens and over another, and, after getting a blast of air for the finishing touch, he found himself with the other high-class plump kernels scattered over the barn floor. The trash, dirt, weed seeds, and broken kernels had all been removed, until nothing but the very elect remained. These were then sprayed with a solution of one pound of forty per cent formalin to fifty gallons of water, for the purpose of killing the smut spores which might remain on the kernels. After drying thoroughly, the wheat was then loaded

into the wagon by Oldtimer, who drove out to the field which had been properly prepared for seeding, including an application of five hundred pounds of steamed bone meal—phosphate fertilizer—to the acre.

Happy Hank, with his four big horses hitched to the twelve-foot drill, was waiting just inside the gate, and our kernel of wheat soon found himself, with his other companions, dropping down a narrow passageway of the drill into the damp soil of the big farm, where everything became suddenly quiet.

Within a few days the moisture of the soil penetrated to the embryo of the kernel, and as the plumule started upward to the light, so did the small rootlets start downward, further into the soil, to gather plant food to build the great wheat crop that was to be. Our kernel of spring wheat was planted on St. Valentine's Day in February, for Farmer Good had found after many years of experimentation that early seeding produced much greater yields than did late seeding, so by March first the young plant was enjoying the beautiful sunlight that was beginning to warm up the soil and bring life to the world again.

"Hey! Look where you're going. Quit kicking dust in my eyes!" screamed the wheat plant as Mr.



Rooster, the big prairie chicken, awakened him one morning by his terrible scratching and kicking of dust.

"Can't you let a fellow sleep? All you do is to fly down here at daybreak, strut around, make a lot of noise, and wake everybody up. What right have you anyway in this field?" grumbled Wheatlet.

"Now don't get so riled up, young feller. Some folks don't know when they are well off. If I hadn't wakened you when I scratched that grub worm out of the ground, he would soon have been working on you, and you would never have seen the light of another day. However, you are young and inexperienced, so I will overlook your shortcomings, but remember that I am about the best friend you have and time will prove it." Saying this, Mr. Rooster strutted off, entirely dismissing the incident, and the angry words of Wheatlet.

Several days after this conversation took place, Wheatlet noticed that a stranger had taken up his home just a few feet away, so one morning he asked Mr. Rooster who he was.

"That's Frisky Gray the prairie squirrel," Mr. Rooster informed him. "He burrows in the ground, and has his home down below you about two feet. Farmer Good will kill him if he ever gets the chance,

because he destroys so much grain. He ate a lot of the wheat that was planted here and is now waiting until the corn is planted in the adjoining field, so that he can get another square meal."

"Say, Mr. Rooster, what is that pretty pink thing on that old dirty husk of corn lying on the ground? I have been watching it since the last rain and it is growing larger and getting prettier every day."

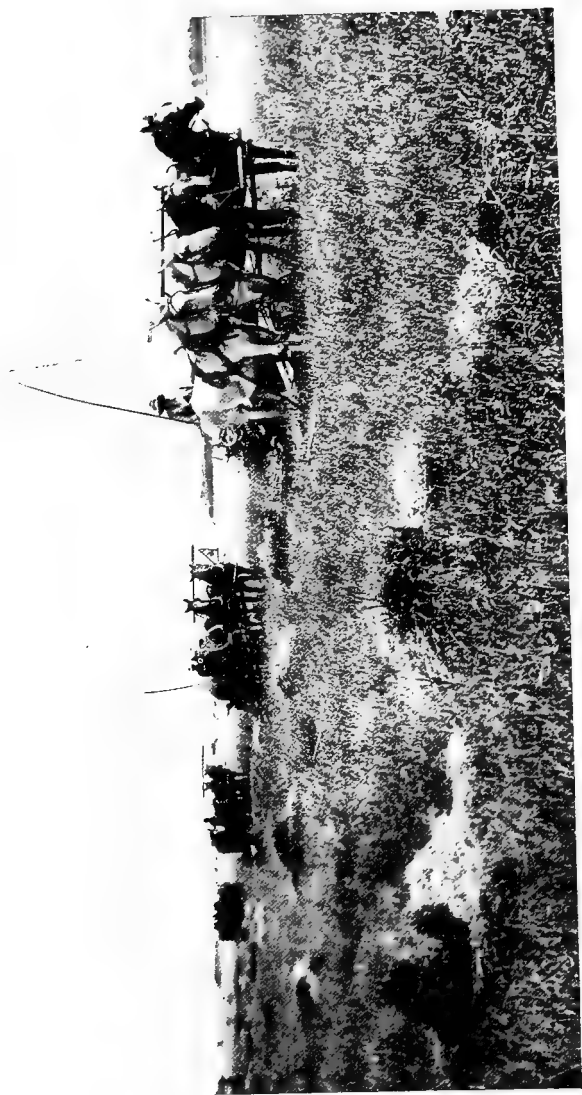
The big rooster walked over to the husk of corn, and found a partially rotted ear from the previous year's crop still in the husk. It was covered with a pink and yellow mass of mold spores, and as the big rooster gave it a lusty kick, these spores were caught by the wind and scattered all over that part of the field.

"I can't imagine what it is," remarked Mr. Rooster, having no idea that he had done the worst thing possible when he scattered the growing mass off the old corn husk.

Some of the flying fusarium spores from the husk—for this is what they were—found lodgment on the wheat plants, others fell at the roots of plants and succeeding rains carried them down to the root hairs, which in taking up moisture and plant food carried these spores up through the canals of plant stems to the young wheat heads that were just forming.



Footprints of the Big Prairie Rooster in the Snow Covering the Crop of Winter Wheat.



The old way. A hard life for Old Dobbin.

This happened to the plant just adjoining Wheatlet and with whom he had become fast friends. One day his friend complained of feeling badly. The young head of wheat just forming took on a withered appearance, while one of the new kernels began to turn pink. A few days later several more kernels on this head turned the pinkish color, just as the old husk on the ground had, and all the time the voice of the diseased plant became weaker, until one day all signs of life ceased and Wheatlet was unable to get any response whatever. The entire head of wheat had now become a mass of pink mold, and all around him Wheatlet could see other plants similarly affected.

However, Mr. Rooster couldn't explain it, nor could Bob White, Peter Rabbit, or Meadow Lark unravel the mystery.

Then one day Farmer Good came through the field and in his hand he held some wheat plants that had the same appearance as Wheatlet's friend. He came direct to the spot and, reaching down, pulled out his diseased friend by the roots and carried him away. The next day, in conversation with Bob White, Wheatlet told Bob all about the incident.

"Well, Farmer Good is a wonder when it comes to finding out things," remarked Bob White. "He will

locate the trouble and we shall know all about it some time. He is having trouble in another field where your cousin Winter Wheat is growing. I am helping all I can, but Chinch Bug and Hessian Fly are causing a lot of damage, as there are so many of them. I have told all my friends and relatives about it, and to-morrow we are going to make a raid on them. They are mighty good eating just at this season of the year; besides it is a great help to Farmer Good to get rid of them.

"Food is a great thing," Bob White continued. "We couldn't get along without it. Now I like bugs. They are my main diet, yet we must have something else to balance our ration. Now you are just the same way. In order to make a great crop you must be fed the proper elements of plant food. A good example of this is a field of wheat belonging to Farmer Shiftless down the road a mile, that is literally starving to death. He never has grown a crop of clover to furnish nitrogen, neither has he applied limestone to furnish calcium and magnesium; while as far as rock phosphate, acid phosphate, or bone meal to provide phosphorus are concerned, he ridicules the idea. Therefore right now, while the wheat plants need the phosphorus to build the kernels, the roots find that other crops have taken

all this necessary food out of the soil and they are just yelling their heads off for something to live on. They are all very weak. Many have died, while most of the heads of wheat are very small.

"But over here there is a very different story. This field is just filled with all the best plant food imaginable. When you needed nitrogen to build the stalk, the roots just heaped the food on you that made you a great strong plant. Now when you needed phosphorus to produce the big plump kernels, all you had to do was to tell the roots to gather the phosphorus from the bone meal that was put on the field this spring, and you had a regular banquet. Farmer Good feeds the crops through the soil, then he has enough left over to feed us for helping catch the bugs and worms that would injure you," concluded Bob White.

A few days later the field began to assume a new color. The vivid green of the spring was changing to a greenish yellow. The wheat was in bloom. The odor could be detected everywhere, and Bob White and Mr. Rooster knew that soon the fields would be covered with shattered grain, affording them a great feast. The following week the wheat field turned a beautiful golden yellow, and early one morning, after the dewdrops had been chased away

by the brilliant rays of the morning sun as it rose over the great corn fields to the east, a noise was heard at the far corner of the field. The noise became louder as the big machines came closer, until at last the big gas tractor drawing two big harvesters rushed by and our Wheatlet, now a full grown beautiful head of wheat, was cut and bound with others and soon placed upright by the automatic shocking machine in a symmetrical shock containing nine sheaves. The harvest was soon over, and the big field was a wonderful sight with its thousands of beautiful shocks.

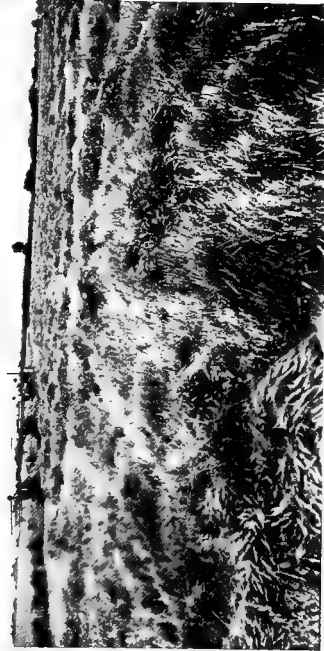
"Well, this is much more comfortable," remarked Mr. Rooster one morning, as he brought his family over to the shock where Wheatlet was, wondering what would happen next. With this remark Mr. Rooster and his lady flew to the top of the shock, while the young chicks played among the young clover plants in the stubble, caught grasshoppers, and picked up shattered kernels of wheat.

"Before you go away, Mr. Wheatlet, I want to thank you for the protection you gave me until I could get started right," thankfully remarked young Clover Plant.

"It's strange how dependent we are on each other," he continued. "Here I have been depending



Tractors make light work of harvest.



If you want a big wheat crop feed me. Right—(above) fertilized. Left—not fertilized.



After the Heavy Work Is Over.

on Wheatlet. Mr. Rooster and Bob White were looking after him, and Farmer Good was furnishing food and protection for us all. I wonder who looks after Farmer Good," he mused.

"It must be He who brings the sunshine and the rain, and puts all the good things here for our use, who gave us all life, and a disposition and ability to work for the welfare and comfort of each other," thoughtfully replied Mr. Rooster.

Just at this time Farmer Good and some strange men came into the field and after thoroughly inspecting the grain Farmer Good said:

"Yes, this is a certified field of pure-bred Marquis Spring Wheat, and I can deliver it threshed and re-cleaned to you by next January at Amiens in time for spring seeding."

After quite a lengthy conversation, the discussion came to a successful conclusion and as the men went off, Mr. Rooster, who had remained hidden under the clover plants a short distance away, came over to the shock toward Wheatlet and remarked, "Do you realize what it all means? That strange man is the French Agricultural Attaché in this country, representing the French farmers. He has purchased all the wheat in this field, to be used in seeding the battle fields of France. You are to be shipped to

Amiens, in Northern France and will be sown on the battlefields of Flanders. Luck to you, my friend, and here's hoping that you will help to make that heroic country what you have helped make this—a great republic.”

## FRIENDLY ENEMIES, THE ANIMALS

OUCH! Oh my! I wonder what is the matter with me. I can hardly move," cried Stripes, the striped ground squirrel, one day in April, as he tried to unroll from the ball he had formed himself into last October when he went into his long sleep. He was nearly two feet under ground, in a nice warm nest which he had constructed, and here he had passed the winter. His sleeping chamber had been carefully carpeted with soft grasses, while an adjoining subterranean chamber had been set apart for storage of his food during inclement weather. Here he had cached kernels of corn he had taken from Farmer Johnson's corn field. The wheat heads which were cut by his sharp teeth from the nearby wheat field were also placed here, as were the roots and grasses of the pasture.

During the summer and fall he had grown quite sleek and fat, so one chilly, rainy day in October he decided he would take a nap, and before he knew it he fell fast asleep, so sound asleep that he did not awaken until the warm April sun had warmed

mother earth to such an extent that the violets were all in bloom and the cold, bleak winter was a thing of the past.

This day of spring had induced great activity in the animal and bird world, and the mole, in working out a new runway, dug into the tunnel of the squirrel. He decided he would learn what was at the other end of the new passageway, therefore he ran into the squirrel just as he was awakening from his long sleep. "Hello, Stripes! What's the matter? Going to sleep all summer, too? You had better get out and stir yourself, as your home is all caved in," commented the mole.

"I just fell asleep yesterday, but I never awakened so stiff in all my life. I was over in the corn field getting some corn to keep me over winter and being tired I slept longer than I thought. My! I am so skinny and poor. What is the matter with me, anyway? There surely is something wrong," exclaimed Stripes.

"No, nothing wrong at all," returned the mole; "only that you have been asleep all winter. While the ground was frozen hard and covered with snow, you have been down here having a good snooze," the mole explained.

"Snow? You say the ground was covered with

snow? What's that? You mean to tell me I have slept all through the winter and it is now spring?" queried the squirrel.

"Well! Well! And I have always wanted a better pair of eyes, and a lot of other things, but here is a poor fool with good eyes and a chance to see the world, yet he gets down here in a hole and sleeps half of his life away. Never heard of snow. Couldn't tell what it was if he met it coming down the road. If I had the eyes you have I surely would get out and see the world winter as well as summer," lectured the mole, and he became so disgusted that he returned to his own work of making new runways.

This kind of talk served the purpose of bringing the squirrel to life, and he then started for the sunlight. However, his exit had become jammed by the horses walking over the place in the early spring while the ground was soft, so he had to dig quite a bit in order to get out. Then all at once the sweet pure air rushed in through the opening, the April sunshine struck him fairly in the face, nearly blinding him, and with the exertion of gaining an exit in his weakened condition he was quite exhausted. He waited a few moments until his eyes became accustomed to the intense light, then cautiously emerged from his den.

"Yes; I surely have been asleep a long time. The pastures were brown when I went to sleep and now they are a beautiful green. And where is the corn field? When I last saw it yesterday I was taking corn kernels in my pockets from the stalks and carrying them down home, and now everything is gone and an oat field is in its place," wondered Stripes to himself. "I surely have missed something," he admitted at last.

"I wonder where everyone is. Guess I will give them a call," he said as he raised himself on his hind legs and used his chirping call. First there was no response; then he gave his peculiar trilling whistle, which attracted the attention of Peter Rabbit.

"Why, hello, Stripes! First time I have seen you or any of your crowd for an age. Where have you been for the past six months? I see you still have your thirteen stripes all right, but you look badly. Had anything to eat lately?" asked Peter.

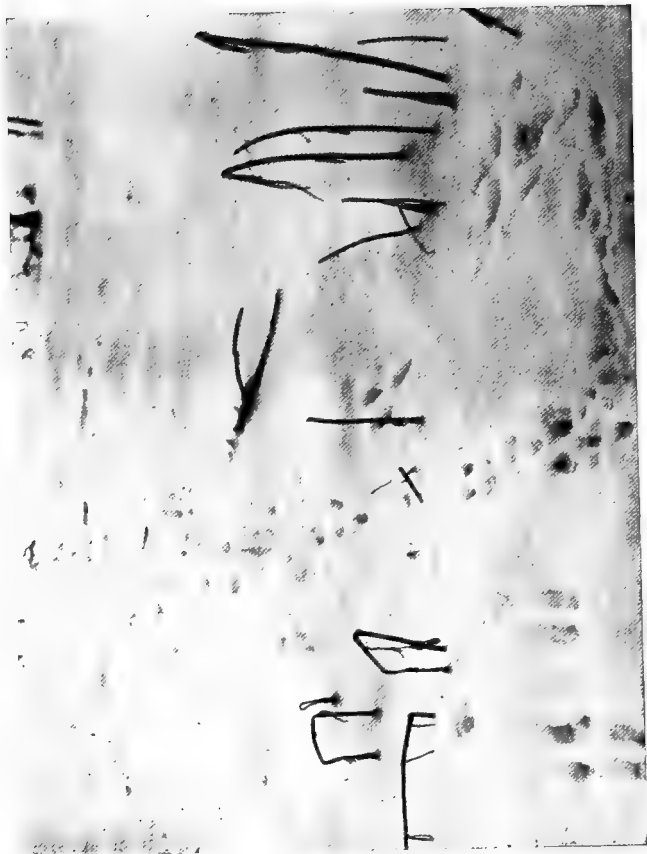
"Say, Peter, do you know what snow is? Did you ever see it?" asked Stripes.

"Do I know what snow is? Oh! Boy! Say, Stripes, I live from one year to another just for snow. Ho! Ho! That's a good one, asking a rabbit





"Who said I couldn't walk on two feet?"  
"I should say I know what snow is," said Peter Rabbit.



Peter Rabbit Was Happy Last Night Surely.

if he knows what snow is. Say, go over and ask Mallard Duck if he knows what water is," and Peter laughed so hard that he had to hold his sides, and made so much fuss that Billy Skunk, who had been destroying a nest of field mice over by the hedge fence, came over to see what was the matter.

When Stripes saw Billy Skunk coming over, he dodged back into his hole, just leaving his head out, as he knew that Billy would not hesitate a moment to eat him if he had the chance. He knew that Billy was a mighty good friend of the farmer, as his food consisted mainly of mice, field rats, grasshoppers, crickets, May beetles, wasps, and larvæ of all kinds, also lizards, snakes, frogs, and chickens when he could get them, and he knew that he would also like squirrel, so he was taking no chances.

"Say, Billy. Here's a good one. Stripes wants to know if I ever saw snow. Me, a rabbit! Ho! Ho! You tell him, I can't," and Peter Rabbit hopped away convulsed with laughter.

It was so funny to Billy Skunk that he opened his big mouth, showing his sharp white teeth, and after recalling to mind the big early snow of the past winter, wondered where anyone could have been and not have seen it. He thought how ridicu-

lous the whole thing was, so he made no answer whatever, but just calmly and clumsily waddled off, grinning to himself.

"Well, that's funny. They won't even give me an answer, but just laugh themselves sick and walk off. I wonder what's so amusing about it anyway," said Stripes to himself, all at once coming to the realization that he had asked a most foolish question. He also realized that he was terribly hungry, so he ran over to the old fence and began tearing at the roots of the new spring grasses. Then he uncovered some May and ground beetles, as well as some white grubs hidden in the grass, which made a suitable breakfast.

He ran down the fence to another field, to see what was planted there, and found a fine crop of spring wheat growing. Here he began digging at the roots of the young and tender plants recently sprouted, and found that the young wheat plants were about the best things he had ever eaten. He was so hungry that he gorged himself while he had the chance, and destroyed nearly every plant for quite a small area, but he satisfied his hunger, regardless of what the consequences would be to Farmer Johnson.

While he was busy with the wheat kernels, he was

joined in the work of destruction by the big prairie gray squirrel. The big gray with his powerful forepaws soon made quick work of the wheat plants, as he was soon to do with the kernels of corn that would be planted in a nearby field.

The big gray was quite a clannish sort of fellow and did not mingle with the other folks at all, so he stuck strictly to his business and did not pay any attention whatever to Stripes. As he returned to the pasture, after eating all the wheat he could hold, he encountered Chubby, the field mouse, also engaged in taking his breakfast from the wheat field, who upon seeing Stripes rushed to the old fence post and dodged into a knot hole which was the door to his home.

"What's your hurry, Chubby?" cried Stripes after him, as he disappeared in the old post.

"Just taking my morning exercise," returned Chubby, thrusting his head out of the knot hole, as he did not want Stripes to know that he was afraid of him. He knew that Stripes would not hesitate to kill him if he was quite hungry, provided he had a good chance, so he was going to see that he did not have the opportunity.

"Say, Chubby, when did you move over here? The last time I saw you, your home was over near

the corn field. Who made you move?" asked Stripes.

"Oh! I have had several homes since then. You see as soon as Farmer Johnson cut his corn and put it in the shock, I appropriated one of the big ones for my use. Talk about your winter homes! The finest place you ever saw. All the feed stored up for your use, and all the work done. Snows did not bother at all. Wind could not get to me and as I had all my family and relatives with me, we surely did have a great winter, but we didn't leave much corn in that shock for Farmer Johnson to feed his cattle. My! How we did eat and how fat we were. Well, one day the men tore the shock down to feed it to the livestock, and then we had to hunt new quarters; but, as it happened on a nice warm day, I ran over to the orchard, and found a good home in a heavy tussock of grass by the fence, quite close to some young apple trees. When the snow came I tunneled under the snow to the apple trees and had the finest kind of food. Apple tree bark in the winter is fine and I surely did go for those trees. Then as spring came I decided to return to the field where I could get spring wheat, so finding this hollow post, I created the finest nest here you ever saw, and here I am," concluded Chubby.



Hot on Peter Rabbit's Trail.



Mallard—the old green head is getting suspicious.



"Well, Chubby, how about the apple trees? Won't they die now that you have eaten all the bark from around the base of the trees?" asked Stripes.

"Oh! What do I care? They will plant more of them. If they don't want me to kill their trees, let them protect them, like they do down the road at Farmer Brown's place. There they put wire netting or tree protectors around them, so Peter Rabbit and my relatives can't get to the trees. But so long as Farmer Johnson does not learn how to do these things, why he'll just have to lose his trees, that's all," explained Chubby.

"You are rather hard on the farmer, aren't you, Chubby? In fact, you are about the worst pest he has to contend with. You eat his grains, grasses, and fruit trees, and gnaw holes in his grain sacks, but you don't help him very much by killing insects, as some of the rest of us do," said Stripes.

"Say! I wouldn't brag about being any great help to anyone if I were you," returned Chubby.

"You are the fellow who invented bad luck, did you know it? Do you know how you got your thirteen stripes down your back? You don't, do you? Well, I'll tell you," Chubby said.

"Well, a long, long time ago when the animals were created in the garden by the Tigris and

Euphrates rivers, they were all colored alike at first. But after all were finished it was decided to make some black, some white, some brown, some spotted, and some with stripes—in fact, to make them so that they could be easily distinguished by each other.

“So one day, while the Tiger was getting the stripes put on his sides, and the Leopard was having his spots painted, there was a little tan colored animal kept near by to use as a brush cleaner, a thing to wipe the brushes on. Well, after they had finished putting the last stripes on the Tiger, the Giraffe, and the Zebra, the spots on the Leopard and the black on the mane of the Lion, there was a little paint left. They gave this little insignificant animal a few more touches and so they put on your back the unlucky thirteenth stripe.

“This last stripe had no more than been added when you, all puffed up at being thus decorated, tried to be exceedingly bright. You kicked Old Bumble Buzzer the bumble bee in the face, and took a slap at Bald Hornet. This made them both hopping mad, and as they had not yet tried out their new stingers they at once proceeded to get busy.

“They both lit on the Lion about the same time, just as he turned his head and saw you inject your



"Going to the cornfield for lunch, be back this evening," said Mallard Duck.



The home of Jerry Muskrat.

bit of comedy into the peaceful scene. Well, the roar that came from that Lion was heard around the world, and the after effects are still to be seen everywhere.

"The new stingers of Bumble Buzzer and Bald Hornet were long and terribly sharp, and the pain to the Lion was beyond description. The only thing he could think of was to get away, and bite something as he went. He bit the Elephant, who lunged into the Camel and rammed him against a tree, pushing him all together, and thus giving him his hump. Then he slapped the Giraffe, who caught his head in the fork of a limb as he ran under a nearby tree, thus pulling his neck out to such a great length. Then the Lion bit the tail off the Lynx, who in turn slapped the Wildcat, which made the Wildcat wild.

"As the Elephant charged out of the garden he stepped on the tail of the Beaver, with the result that the Beaver's tail has been flat ever since. As the Camel fell back from the tree into which he had been rammed by the Elephant, he stepped on the tail of Jerry Muskrat and tore all the hair out, so that ever since Jerry has had no hair on his tail whatever.

"Well, matters went from bad to worse. It was

no place for timid folks, and the Ox knew that something must be done, so he blew his horn and in rushed the Bear, just in time to collide with the Buffalo. This pushed the Buffalo all up together, so that he is so big in front and small behind, while the Bear got such a sore head from the collision that he has never recovered from it, and has been growling ever since.

"Well, the Hyena, who was a very solemn sort of fellow, jumped up on a big rock to get out of the way, and the whole affair became so amusing that he began to laugh and has so far been unable to stop; therefore he is called the Laughing Hyena.

"After a while, everyone got out of each other's way, and as Bumble Buzzer and Bald Hornet had about worked themselves to death getting revenge, they decided to rest. Then the animals gathered around after quiet had been restored and wanted to know who started the trouble. The Lion who saw the start of it made his statement, which was at once accepted as the truth, so a council was called to decide what should be done with you.

"After arguing and discussing for a long time, it was decided to have you spend half of each year under the ground asleep, while the assembling of

the animals takes place; therefore you have to hibernate for the winter and it has been this way all through time and shall be so long as your race lives. That is the reason that last stripe on your back is unlucky, because you started all the trouble that resulted so disastrously to the other animals," concluded Chubby.

"Say, Chubby, who on earth told you that fairy story?" asked Stripes.

"Well, one evening the Owl tried to get me to come out from under a hollow stump, and promised to tell me a story if I would. I told him to tell me the story first and I would think it over, and this is the story he told me. But I told him that it was Friday the thirteenth and I guessed I would stay in the old stump, as it might be unlucky if I came out," answered Chubby.

"But where did the Owl get the story?" asked Stripes.

"Oh! The Owl knows everything," returned Chubby. "I guess his ancestors were there at the time it all happened and it has been handed down to each generation."

"Well, I don't believe my thirteenth stripe is unlucky anyway, while I am asleep all winter, I

don't miss much, so I don't care. Say, Chubby, what is this they call snow? Tell me about it," asked Stripes.

"Go over and ask Old Bumble Buzzer about it. He is wild about snow. He will give you some sharp information about it, if you will approach him right," chuckled Chubby to himself, as Stripes, seeing the futility of trying to get the desired answer, went off toward home, muttering to himself that Chubby was like all the rest.

It was three months later that one summer evening Bobby Coon left his timber home near the creek, and came out through the pasture to the corn field in search of the fresh young corn that he liked so well. As he passed the home of Stripes he stopped a moment in the twilight of the evening and called to him. As Stripes came up to his front door and peered out, Bobby said, "Hello, Stripes. Think it will snow?" then roared with laughter, and leisurely wended his way on to the corn field. The story had reached all the animals of the country by this time, and they were having a lot of fun at the expense of Stripes.

Bobby found the corn all right and had a fine feed. He then went down to the little brook at the end of the corn field to get a drink. Here he found



Jerry Muskrat busy erecting a new house. It was about four feet high and five feet wide, with a dome-shaped interior that Jerry said was very commodious. Jerry and Bobby were quite good friends, so Jerry told him all about the interior, as Bobby couldn't get in to see; for the two entrances were accessible only from the bottom, and he would have to dive down into the water, swim along a passageway, and then come up inside the house. But as Bobby was not equipped for this kind of work, he took Jerry's word for the interior. Jerry had made the house of sticks, weeds, rushes, and reeds, then plastered it all solid with mud, after which he had lined the sleeping quarters with soft grass. Here he stored his winter food supply, which usually consists of roots and stems of succulent plants, varied with fresh water clams and occasional fish.

However, Jerry is careful to select sticks of wood with which to build his house. These can be used during the winter as food in case of need, so all the shrubs that have a bark that is pleasing to Jerry's taste are to be found in his house.

While Bobby was talking to Jerry Muskrat, Billy Mink came slipping along the bank and seeing Bobby, said, "Going over to Farmer Brown's chicken house to-night for more eggs, Bobby?"

"How did you know I was over there?" questioned Bobby.

"Why, you went out the front door as I entered the back door in search of a fat pullet," admitted Billy. "I have been living on mice, rats, ground squirrels, chipmunks, snakes, frogs, and insects long enough, so I am going to have a little chicken from time to time," Billy continued.

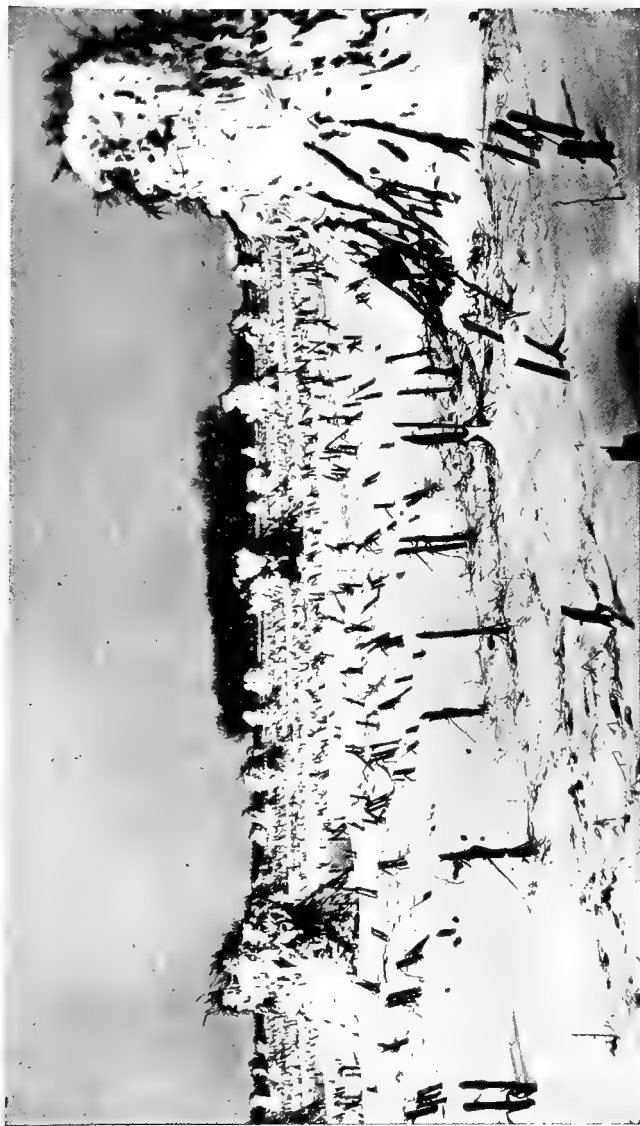
"Well, Billy, there is nothing like fresh eggs, and Farmer Brown's eggs are always fresh, because I see to it that they never get stale," and Bobby Coon laughed at his joke.

Johnnie Chuck, the big woodchuck, had his home up on the hillside near the timber and, hearing all the talk and laughter of Bobby Coon, Billy Mink, and Jerry Muskrat, he came down to see what was going on.

Now Johnnie Chuck had been feeding on grasses, clover, and succulent plants, as well as the grain crops of the neighborhood, and he didn't care for eggs. He was not very energetic, so he didn't move very fast, but his ideas and his wisdom were held in very high regard by all his other companions.

"Well, Mr. Weatherman, what's in the wind?" asked Bobby Coon as the woodchuck came up.

"Fair and warmer," returned Johnnie Chuck.



The Cold Winter Home of Chubby the Field Mouse.



Apple Blossom—the start of the Big Pippin.

"Say, Bobby, what is this about you and Billy going over to Farmer Brown's for eggs and chickens? Don't you think he will soon find out all about you two and tack your skins on the chicken-house door?" asked Johnnie.

"Well, Johnnie, you tore up his wheat crop for him last summer and I see you are still with us, so I guess we shall get through," returned Bobby Coon.

"I guess we are all in the same boat when it comes to taking things. We all have to live, and I guess he will have to put up with us. Say, what is this joke I hear about Stripes the Ground Squirrel," asked Johnnie.

"Why, Stripes asked Peter Rabbit if he knew what snow was, if he had ever heard of it, and Peter has told everyone and is still laughing about it," answered Bobby.

"Well, that's nothing strange. You see I am here the year around and folks consider me a wise old gink. They say I am the weather prophet, yet I rarely ever see snow. Stripes and I go to sleep about the same time in October each year. He does not awaken until all danger of snow and freezing is over, but I have to get up on the second of February to regulate the weather for the coming spring. So when that day arrives and there is snow

on the ground I surely see my shadow, so I hurry back and take another nap for six weeks. That is about the only time I see snow, and you can see how Stripes never sees any, and how impossible it is for him to know what snow looks like," explained Johnnie Chuck. "But it was a good joke to ask Peter Rabbit, anyway," he went on. "Well, you boys take care of yourselves to-night and don't let Farmer Brown's big dog get you. I'll help out all I can and cook you up a dark rainy night if it will be any help to you," called out Johnnie Chuck, and he started for home, just as the shadows of evening were falling across the meadow land, the corn field, and the little brook.

## THE LIFE STORY OF AN APPLE BLOSSOM

**W**ELL! Well! Well! I'm the first one up on the old pippin tree. Wake up, you fellows; going to sleep all summer?" called out the eldest blossom on the widespreading apple tree. "Come, get a move on you, as busy Billy Bee will soon be along for his morning nip, and if you fellows don't loosen up soon you will never amount to anything. Remember if you don't give, you will never receive, so give Billy Bee a good swig of your honey and he will bring you a package of bright yellow powder pollen, that will put life into you, and make you a regular fellow some day.

"You fellows may not know it, but when Billy Bee gets honey from some other blossom he also gets pollen on his feet from the stamens of that blossom, then when he comes over here to see you and get your honey—the thing that really attracts him—why he scatters the pollen all over you that he brought with him from the other blossom and thereby he fertilizes you so that you will continue to grow and produce a mature apple. Otherwise, with-

out the help of Billy Bee and the fertilizing pollen, you will wither and die within a few days."

"There was a fellow on this same limb last year, so I have heard, that was a sure 'nuff tightwad. He wouldn't give any honey at all. Just stayed closed up all the time, keeping his honey to himself. Billy Bee and his friends just left him all alone and didn't pay him any attention whatever; didn't powder him up every morning with nice yellow pollen, so old Mister Tightwad got what was coming to him—he died.

"Listen, fellows! I hear him coming. There he is. Hello, Billy Bee! Come over and I'll load you down. Fine day for bees and apple blossoms, isn't it?"

"Yes, but you had best pull your eiderdown comfort up over your ears to-night, for old Jack Frost is going to make us a call," buzzed Billy Bee as he took his toll of honey from each blossom, and also dropped a good word of advice as he visited his friends in Farmer Good's big apple orchard.

"Oh, my! That sounds bad and I am cold already," shivered the one-day-old pink bud, Baby Blossom, the hero of this story.

"I'm afraid that some of the youngsters will not pull through to-night, if they stay up late," was the





About Ready for the Apple Show.



Neglect.

parting remark of Billy Bee, as he made a "bee" line for the Rambo tree.

After several hours of cold rain followed by a white frost the little twig on which our hero had been frozen to sleep felt a quiver, then a shake.

"Ugh! Brrr! My, I am about frozen," shouted the eldest bud. "What's the matter with everyone? Hello, Sonny! Just able to move, are you? What's that? Half of you fellows frozen stiff? Well, that's too bad. That was a terrible night, wasn't it? I expect a lot of the fellows won't be out any more. I wish Mr. Sun would hurry and warm things up. It would help you a lot and wouldn't hurt me any either."

About this time a great racket started at the other end of the orchard, which stirred to life all the blossoms on the hundreds of trees in Farmer Good's orchard. At once every blossom on the old pippin tree that had any life left was asking what it all meant. Just at this moment Bluey Jay-Bird flew up among the blossoms and, hearing the excited conversation, said that he would fly over and see what it was all about.

In a moment he came hurrying back.

"It's Farmer Good," said Bluey, "and the boys with the new power sprayer from the Farm Bureau.

They are going to give you fellows a bath of poisoned water to keep you healthy. I heard him say that the other spray he gave you, before you opened, was lime-sulphur 1 to 10 strength, to control the San José scale and other parasites, but that since you boys were out now, they would use it 1½ to 50 strength, a much weaker solution, but would add the arsenate of lead to kill the chewing insects that will injure you later on."

"I wonder if it will hurt," questioned little Baby Blossom, who had barely survived the cold.

"Not if it isn't too strong," said Bluey. "If it is too strong, it will kill the buds and also turn the leaves brown, but I think that Farmer Good knows his business. This spray is put on about the time some of you begin to lose your petals, and then again every ten days later for two or three sprayings," concluded Bluey.

About this time Billy Bee buzzed by in a terrible hurry, chasing a great big fellow, who was making frantic efforts to escape.

"Look!" said our apple blossom. "Who is that big fellow Billy Bee is chasing? Billy is in a terrible rage. Oh, look! Cock Robin gobbled him up. I wonder what it was all about. Here comes Billy Bee back, I'll ask him all about it."

Billy settled himself on a convenient blossom, all "het up" after his chase, but his rage slowly subsided.

"Well, Billy, who was the big fellow?"

"That was old Codling-Moth. He and his children can do more damage in an orchard than a fire," angrily explained Billy Bee. "I hate him. He is always looking to see whom he can destroy. He won't work, but just lives off other people. Cock Robin knew what to do with him."

After Billy Bee had rested and taken another sip of honey, he went over to pay his respects to the blossoms of the Maiden Blush tree.

"Billy is a good fellow and a perfect gentleman," said little Jenny Wren, who had stopped to see what the racket was all about. "Billy is always busy and never harms anyone who doesn't bother him. He has a violent temper, however, and never fails to back up his argument with a weapon that will make anyone move."

At this point Farmer Good, with his power sprayer and its drenching shower of lime sulphur and arsenate of lead, gave our friends, the blossoms of the old pippin tree, a soaking, but a sudden gust of wind blew the spray to one side so that one limb was not sprayed. After it was over our Baby Blos-

som screamed through his tears, "Ouch! Wipe my eyes. Goodness, what a taste! That should keep most anything away."

"Hooray! That's a good joke," said Pinkie Blossom on the unsprayed limb. "Never touched us. Missed us entirely. We didn't get a bit."

"Well, you didn't miss much," said Baby Blossom. "However, time will tell whether you are in luck just now or not. You seem to be now, but from what Bluey Jay-Bird said I have my doubts about it."

After a lapse of a few weeks, on one bright morning the young pippin, now beginning to grow into quite an apple, ventured the assertion that the twig he was on was beginning to complain about his weight. After looking around, he said:

"Say, fellows, what is the matter with you on your limb? You say that codling-moth's children are eating you? Oh, that's too bad!"

"You will remember that we were rejoicing when we didn't get sprayed," remarked one poor little fellow who was about gone, "and feeling sorry for you with your eyes full of spray material. Well, we were the unfortunate ones, since the poison you received killed old codling-moth's children as soon as they were born. But we didn't have any protec-

tion at all, all on account of the wind's blowing the spray away from us."

"I am terribly sorry for you," said our hero, "but at the same time I am most thankful that I got such a soaking. Old Rambo tree got too strong a mixture, due to the mistake of Careless Jake, and the leaves are all turned brown. Farmer Good has put Jake on a job where he doesn't have to use his head, so that he can't make trouble any more."

One bright September morning the apple, now quite a matured pippin, after lustily shaking the morning dew from his well rounded sides remarked:

"Say, fellows, I'm not bragging, but I sure am some pippin. Gee, this is the life. Birds singing to us all the day, the wind rocking us to sleep, and the girls of the Maiden Blush tree flirting with us every time we look their way.

"It's too bad you fellows on your unsprayed limb are so miserable. Old Codling-Moth, Apple Worm, Black Rot, Canker, and their friends surely laid their heavy hands on you. What a difference between us now, and to think we had an equal start!

"My, it's great to be healthy and good-looking. Say! Here comes Farmer Good with a ladder. I wonder what's up now," questioned our hero.

Farmer Good put the ladder up to the pippin

tree, climbed up, and carefully took the big apple—our hero—off his twig and, after wrapping it in tissue paper, remarked to Gardener Bill what a beauty it was, and that it would just complete the exhibit.

After a few moments the import of the conversation dawned upon the big pippin, who sang out cheerily as he was carried away:

“Ain’t it a grand and glorious feeling? I am going to the National Apple Show. So long, fellows.”



## COCKLE BURR, THE ROUGH-NECK

“**A**W! Shut up! You guys make me sick with your yappin’. Can the chatter and let a feller sleep,” disgustedly growled the rough-neck cockle burr one early morning in August, over in Farmer Careless’s corn field. He had been awakened this morning by the lamentations of the corn stalks growing in the field. They were all passing through a very hot, dry period of the summer, that would be long remembered as one of the hottest and driest ever experienced. All the stalks were suffering, not only on account of the lack of rainfall, but because the supply of plant food was insufficient for good development, and also because Farmer Careless had permitted the field to become infested with cockle burrs.

These rough customers were growing in the hills with the stalks of corn, robbing the plants of the moisture and plant food, as well as crowding the stalks, until it became almost unbearable. As the spiny seed-pods of the cockle burr developed and matured, they scratched and irritated the stalks of

corn as they swayed to and fro in the breeze. However, the greatest cause of complaint did not lie here. It was the fact that there was not enough food to go around. Farmer Careless had been mining his soil of its fertility for many years. He did not believe in rebuilding the soil by the application of fertilizers of various kinds, such as nitrogen, phosphorus, limestone, and potash; consequently the fertility of his farm had been consumed by his crops of years gone by, until the present crop was limited to about one-half of a normal yield under good climatic conditions. The stalks of corn had been starving all summer for nitrogen and just now, as the ears and kernels were forming, the plants were calling on the roots to furnish phosphorus to complete the development.

"Why is it that we can't get any plant food?" feebly asked one pale, sickly corn stalk of one of its companions.

"It's because that cockle burr is robbing us," answered the other.

"I wonder if he wouldn't divide with us if I asked him," suggested the sickly one.

"Say, Mister Burr, won't you let us have a part of the plant food that you are taking? We are about starved, and if we don't get something soon we will

not grow any ears to produce corn another year," timidly asked the weak stalk.

"Mister! Say, that's good. Where do you get that stuff? You poor nut, just help yourself. Get what you can and I'll do the same. You hothouse pets need a nurse to look after you. You needn't think that you are the only ones that have a right to grow here. The old guy plows around me the same as he does you. There are just as many of us growing here in this field as there are of you bums, and we have just as much right to live as you have. Believe me, old top, I am going to get all I can while the gettin' is good, and if you don't like it, just do what you durn please," returned the cockle burr as he chuckled to himself, shook around a bit, scratched the corn plant as he did so, and sent word down to his roots to get busy and take everything in sight.

"Tear into 'em, Scrappy," sang out the button weed in an adjoining hill. "These birds are in fast company and don't know it. I've got a pair of mollycoddles here with me. Been making faces at me for the last six weeks. The old man seems to think as much of me as he does of them, so I ain't worryin'."

"Well, we were planted here for a purpose,"

bravely returned a good-sized stalk of corn. "We have a mission to fulfil. We grow an ear of corn that helps feed the people and livestock of the entire world, and we really are worth while, but I have never heard of you fellows ever doing any good for anyone."

"You talk like one of these new-fangled agriculturists, you big stiff," commenced Cockle Burr. "Say, what does our old man know about a purpose or a mission? All he knows is to eat and sleep. He ain't bothered about missions or any other fool thing, and don't kid yourself into thinking you will ever do well here on this farm. Why, goldurn it, we have been here on this farm longer than he has. His father and grandfather raised us here years ago when there was plant food enough in the soil to grow cockle burrs, button weeds, corn, and everything else, and believe me, 'bo,' you ain't agoin' to change the old man now. This is our farm, and we shall be here the day the old guy is carted off to be planted with the daisies," chuckled the cockle burr, and at that the button weed, the jimson, and the bull nettle roared with laughter.

Days and weeks went by, and many were the conversations that took place similar to this one, until one day early in November Careless Jake came



Reddy Fox Travels Across Country. Cockle Burr Goes Along.



The First Snow Fall at Reddy Fox's Home.

into the field and began husking the corn. The corn was quite poor. There was very little over half a crop, the other half being made up of noxious weeds of all kinds, so it didn't take Jake very long to get over on to the row where Cockle Burr and his friends and companions were, that had now grown to full maturity. As the team went by and Jake husked the nubbins and small ears that had struggled for an existence, one poor little nubbin exclaimed, "Well, I am glad to get away from here and out of this kind of company."

"You guys got nothing on us. Guess some of us will just go along," retorted several of the new cockle burrs on the big plant, as some of them grabbed the tail of Big Dick, the bay horse, as he brushed by, while others hung on to the hair of his fetlock. Then as the wagon came along other burrs clung to the mud on the wheel, as it revolved over the ground, breaking the plant over, and thus started the great distribution of burrs from Farmer Careless's field.

A few days later Peter Rabbit, in running through the corn stalks, encountered the broken-down plant and two burrs grabbed him as he hopped along. These stayed with Peter for several days, until he lost them across the road in Farmer Brown's field of clover. Farmer Brown hated cockle burrs as he

hated rats, and he had been wondering why it was that he could never get rid of them. It was all because Peter Rabbit kept carrying them over from Farmer Careless's field, and Farmer Brown never found it out until one day he killed Peter Rabbit in his field as he came from across the road, and there he found some new burrs in Peter's fur.

One day Reddy Fox came trotting through the old corn field, and some more burrs found transportation in the fur on Reddy's sides and in his bushy tail. Reddy was starting on a long trip across the country and after he had traveled quite a distance, the burr on his left side began to irritate him, and to interfere with his speed. So he stopped and began to investigate the cause of the trouble. He was not long in finding it, so with his teeth he pulled the burr off and left it in the middle of Farmer Jones's winter wheat field. Reddy had gone only a short distance when the burr on his right side began to cause trouble, so stopping in Farmer Smith's corn field, he left a contribution for him in the shape of another burr. Reddy was going many miles to see some friends who lived in Farmer Good's clover field, so when he arrived there in the early morning, just as the great crimson sun was coming up in the east, his friends



asked him what he meant by carrying burrs around in his tail that way.

"I thought I was rid of them," exclaimed Reddy. "You see I picked them up in Farmer Careless's corn field, and I have been pulling them off all the way down here. I left some in Farmer Jones's field, then some more in Farmer Smith's field and, to treat them all alike, we will now give Farmer Good a collection," remarked Reddy as he dropped down on his right side, curling his bushy tail around in front of him, and proceeded to pull the remaining burrs out to start a new colony in the clover field.

So far, Cockle Burr had made good selections for the young burrs in providing methods of transportation for them, but on the next attempt one of the young fellows made a terrible mistake. Billy Skunk came along and Cockle Burr decided that on that great, bushy, black tail would be a great place to ride, so he hooked on, as Billy went slowly by, and no sooner had he done so than he realized his mistake. He had hardly settled himself in that mass of fur when he detected a frightful odor, and was fully convinced that "his day was spoiled." He began at once to lay plans to arrange for other transportation, where it would not only be more rapid

but at the same time the atmospheric conditions would be more conducive to the comfort of the traveler.

As Billy plodded comfortably along through the corn stalks and weeds over to Farmer Careless's barn yard, where he was in search of a tender chicken, Cockle Burr kept reaching for anything that would assist in releasing him, but he was unable to make his escape until he reached the old rail fence at the rear of the barn lot. Just as Billy came through a crack in the fence where the pigs were accustomed to wander from the barn lot to the corn field, Shep the collie dog came around the barn and, detecting the intruder by the odor that permeated the evening air, made a rush for him, catching him just as he attempted to regain the other side of the fence.

"If I live a thousand years I'll never forget that fight," said Cockle Burr to a friend one day, when they were floating down the tile ditch where he was to find himself later on.

"When Billy Skunk saw Shep coming at him, he surely got his masked batteries into action mighty quick, but Shep must have been an old hand at dealing with this kind of a customer. He never stopped, but soon had Billy by the neck. In the shaking and fighting I was grabbing at everything on Shep that



Bobby Coon Went Fishing. Cockle Burr Rescued Himself with the Help of Bobby Coon.



"This Is Too High for Me," Said Cackle Burr as He Sailed over the Big Farm.

I could see, and at last, after many unsuccessful attempts, I did land on old Shep's front leg, and hung on for dear life. Say, of all the places I have ever heard of, that was the worst. Shep and I were both choking for air, and it wasn't long until Shep made a dash for the little open ditch that runs through the old field.

"Well, in the water we went head over heels, and, believe me, it was the most wonderful change that can be imagined. While lying there in the cool water, Shep reached down and got hold of me with his teeth, pulled me off, and sent me adrift down the open ditch into the tile ditch of Farmer Johnson's field and here I am now after a few days' soaking up which makes a fellow feel good."

After floating down this dark underground passageway, he emerged one evening from the mouth of the tile ditch and floated out into the little creek in the edge of the woods, lodging against a drift of branches and leaves along the bank. While he was lying there meditating on what would happen next, Bobby Coon came out on the drift looking for crayfish, and as he reached down in the water for an especially nice one, Cockle Burr grabbed hold of Bobby's front leg. Bobby had quite an evening of it there on the drift eating crayfish, but decided that

in order to have a balanced ration he would need some of Farmer Johnson's fresh eggs, that he knew to be in the nests of the little white chicken-house just at the edge of the apple orchard; so Bobby started off across the bottoms of the little valley, through which the stream flowed. He soon came to a wire fence enclosing a field of alfalfa, and as he crawled through between the wires the cockle burr that was still on Bobby's front leg was pulled off and dropped to the ground, where he soon settled himself in a comfortable position with the other weed seeds that were lying on the ground.

Thus were the burrs of the plant in Farmer Careless's field scattered over many miles and many farms, using many different methods of transportation. Winter came on. Spring with its warm rains washed the burrs into the soil and in a short time one of the two seeds of each burr germinated and started again the reproduction program. Only one of the seeds of each burr germinated this year, as nature has provided that both seeds shall not grow the same year. However, the other seed would germinate the following year, thus insuring the continuation of the plant. Of course all the burrs in the tail and fetlocks of Big Dick were scattered all over the farm of Farmer Careless, as were those

that clung to the mud of the wagon wheels. These grew and thrived unmolested. The burrs that Peter Rabbit carried over to Farmer Brown's clover field grew also, but were cut down with the clover before reaching maturity. However, the burrs that Reddy Fox pulled off in Farmer Smith's corn field grew to maturity in the oat field that followed the corn.

One day during the autumn season a peculiar thing happened to a cockle burr that was growing all by itself on the edge of one of Farmer Careless's fields. One of the army aviators with his great airplane landed in the field, to make some slight adjustment, and the cockle burr thought how wonderful it would be to take a trip in the clouds if such a thing was only possible. However, it is usually the unexpected that happens. The motor of the big ship was soon started; the pilot taxied across the field, then turned into the wind, and came with a rush directly toward the cockle burr, all a-tremble at the sight of this great bird tearing toward him.

"I'm going to take a chance if it kills me," said Cockle Burr to himself. Cockle Burr came from a family that was used to taking all kinds of chances, in order to get into new territory, and he felt that here was a chance to make a name for himself, so just as the big ship was about upon him, he stretched

up his limbs and branches and managed to get entangled in the truss rods of the landing gear, and was jerked out of the ground with a suddenness that made his head swim. When he came to himself he found that he was going out of that field at the rate of ninety miles an hour.

"Hey! Look where you are going," yelled Cockle Burr as the ship heeled over on one wing in a sharp curve, just avoiding a big tree that stood near the edge of the field.

"This bird doesn't care what happens to me. See him go up," he cried, as the ship turned into the wind again and began to climb. Gathering speed and altitude all the while, Cockle Burr was soon tearing through the fleecy clouds at an altitude of five thousand feet, when all of a sudden the motor stopped, the roaring exhaust of the engine ceased, and Cockle Burr found himself falling to the ground with the speed of a meteor. He soon entered into a spiral dive that fairly took his breath away, when very gently the ship righted itself, and glided smoothly into the bluegrass pasture on the big farm of Farmer Good.

Cockle Burr had hardly recovered himself when Farmer Good drove up in his roadster, and as the



young lieutenant climbed down from the cockpit of the ship, Farmer Good greeted him.

"Hello, Bob! When did you get the new ship?"

"This is a new model Chanute Field is trying out, Mr. Good. Look her over; isn't she a beauty?" answered the officer.

"Say, Bob, where have you been? Whose field did you just fly out of?" asked Farmer Good.

"Why, I stopped for a few minutes in a field on Farmer Careless's farm."

"I thought so. Look! Here is one of his pets," said Farmer Good, as he unhooked the cockle burr from the landing gear. "This is a new way for these fellows to travel. I knew they took advantage of everything that moved in order to get into new locations, but I never heard of their traveling by airplane before. I'll take care of this fellow all right and see that he does no damage on this farm."

The cockle burr that Reddy Fox pulled off and left in Farmer Jones's winter wheat field grew the next year, but was plowed under early before it had time to mature, as Farmer Jones knew what to do with them.

The burrs that Reddy pulled out of his tail in Farmer Good's clover field were plowed under in the

fall when the clover stubble was plowed. These germinated in the spring, and some of them came up directly in the hills of corn, while others made their appearance between the rows. These were easily destroyed by the sharp surface cultivators, and after the last cultivation men were sent into the fields in search of any that might have escaped. The highly fertilized ground nourished the stalks of corn so well that they were not bothered by the crowding of the few burrs that were left, and they just laughed at the cockle burrs that were outcasts in this community of good society, when one of them began telling of the good times his folks had had on the old farm of Farmer Careless.

"You high-toned guys gits on my nerves," complained Cockle Burr one day after a lengthy debate in which the intelligence of the high-bred corn easily won out. "If I had my way, and had me pals from up home, I'd show you," he added.

"Well, one thing is sure, you and your low-brow pals won't bother us any, because your time is short. You are right. This is a high-toned bunch of folks, and we don't want any rough-necks of your kind around. What's more, we have a friend in Farmer Good who won't stand for bums and hoboos in or out of the corn field," returned one of the big healthy

stalks. "Here comes our friend now. What he will do to you will be worth seeing."

Just at this time Farmer Good and some of the men from the State University came down this particular row, inspecting the corn of this highly specialized breeding experiment, and as they came to Cockle Burr, Farmer Good reached down and pulled him out by the roots. He took out his knife, then, taking the old seed pod on the root of the plant, he cut it in halves.

"This is a first-year plant," he said, "for, as you see, but one seed has germinated. The other would germinate next year, but we pull these fellows before the new seed pods form and we have to do it every year. There is a fellow living a short distance away from here, by the name of Farmer Careless, who acts as a source of infection for this entire community, as far as weeds of all kinds are concerned. The foxes, rabbits, and other animals carry these burrs, while the wind blows the other seeds all over the country, and so long as this old fellow farms the way he does, the entire country will have to contend with this infection. His farming methods are the same as his grandfather's. He refuses to join the Farm Bureau or any agricultural associations, and is a real menace to the better agriculture.

“However, I presume we shall always have the ‘thorn in the flesh’ in the shape of these cockle burrs, the rough-neck of the plant world, but he will have to be eliminated eventually from the society of high-grade agricultural plants, in order that they may gain the greatest development. In the same way, the rough-neck, undesirable individual must be eliminated from a community, in order that the society and environment may be the proper kind in which to rear and educate our children,” wisely reflected Farmer Good, as he carried the cockle burr out of the field to be destroyed.



Cockle Burr Was Given a Great View of the Country.



"That Was Some Ride," Said Cockle Burr as Lieut. Bob Made His Landing.

## JIM CROW

**H**IGH up in an old cottonwood tree that stood all by itself in the middle of the big farm, was Jim Crow's home. Jim had been a resident of the big farm for the past two seasons, and was therefore quite an oldtimer. This spring he had chosen a dusky maiden for his mate and induced her to share his joy and happiness with him. After much parleying, and examination of various home sites, they finally agreed upon the old cottonwood tree. Several of the big hedges offered attractive surroundings, but Jim reasoned that out here in the middle of the big farm, where they could see all around them, was a safer place to rear their family, so they went to work building the nest. They nearly had a quarrel over selecting the exact part of the tree for the place to build the nest, but as Jim had had experience the previous year in home building, his selection prevailed. This was at a place on a big limb where three other limbs branched and made an ideal site to start the work.

Jim flew over to an old thorn tree where he found

some crooked twigs with thorns attached, which he first used in making the foundation structure of the nest. With these he wound in and out among the thorns, the inner fibrous bark of the dead cottonwood limbs. Then he also found in the old straw stack, some twine which had been used in tying the bundle of oats. These strings he used to tie the main parts of the nest together. After the nest was ready to finish, he then selected the finest of wild prairie grass, also the soft covering from the weeds, and lined the nest with these materials, finally putting in the bottom some of the soft bluegrass that grew along the fences. Here was a home fit for a queen, and in a short time four blue eggs with black spots all over them were resting in the soft carpet of this aërial home.

Three weeks later four fuzzy black shapes emerged from the eggs, and from that time on Jim and the lady of the house had their hands full with keeping those hungry mouths filled. The older they grew, the greater was the burden of providing food for the family. At first the food had to be selected with care, so Jim ransacked the freshly cultivated fields for nice fat worms and the main diet for several days consisted of cut worms and grub worms—big, fat, white ones, that made the children grow very rap-



idly. It was not long until they were able to sit on the edge of the nest and then to walk out on the limbs of the big tree; then they began to find their voice, as they kept informing their parents of the necessity of more food.

However, in another week Jim decided that it was time to teach the youngsters the art of flying, so he urged them to fly from one limb to another until they were lower down on the tree and nearer the ground. Then he would crowd them off the last limb, while they would make a frantic effort to fly, which only served to break the force of their fall to the ground. After many attempts during the next few days they were able to make good progress, and then they soon began to find their own food.

One day one of the youngsters was sitting on a wire fence near his mother, when a field mouse ran out of the grass into the cultivated field, to dig up another kernel of corn which had recently been planted there. The mother made a sudden rush for him; with her huge claws she pinned him to the ground and with one swift stroke of her sharp bill ended his life. Then the youngster was invited down to partake of the delicacy. He enjoyed it very much, and decided that he would try his luck at this kind of a game, so shortly after he noticed a movement

farther down the fence and at once flew at the little animal that was hurrying along. The young crow dropped down on him, but instead of finding a defenseless field mouse he found it an entirely different individual, who was so infuriated by the attack that he turned in a rage on the young crow and his dagger-like teeth slit through the feathers into the throat and the warm blood gushed forth into the face of the weasel, who now was determined to have his own dinner. It was only a short struggle, as the weasel never let go, and soon the young crow lay lifeless, while the weasel was most satisfied with the events of the day.

The other three youngsters did not make such fatal mistakes, but continued to grow and improve under the teaching of their parents. They were now busy most of the day in hunting for food, which consisted mainly of wire worms, corn-root worms, bill bugs, and many kind of beetles. They also learned that at the bottom of each little green corn plant lay a nice kernel of corn, and they were busy for a week or two in pulling corn kernels out of the mellow soil where they had been planted. One morning as Jim Crow and his family flew across the country to a field where some corn was just coming through the ground, he gave his three children their first lesson

in protection and self-preservation. They all alighted on the fence posts that bordered the corn field, and from this point of observation Jim began his morning lecture:

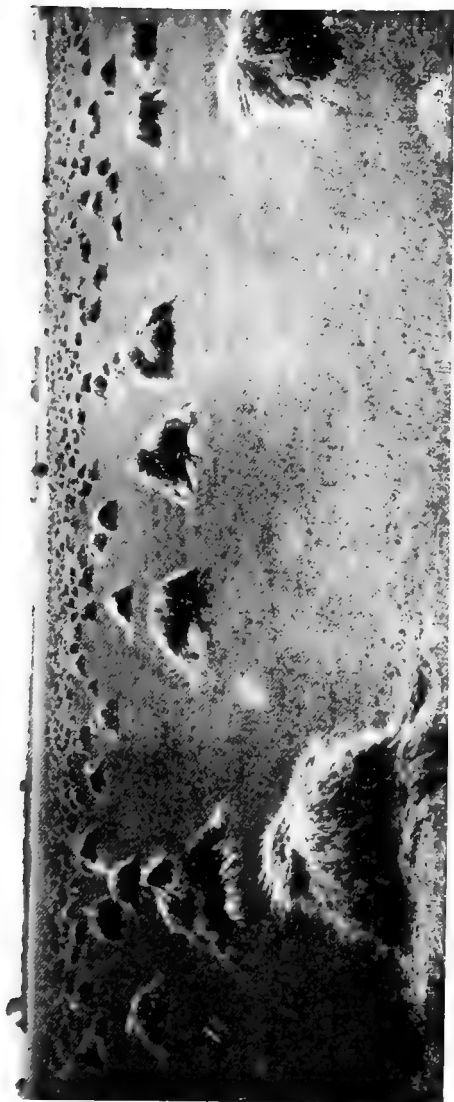
“Now, children, I want to give you some instruction that you are to use all your life and the knowledge that you display in observing these rules will determine the number of days you will live. Now, you very well know that we are not handsome or beautiful like many of the birds, and if we should try to compete with the others in singing, why everyone would get out of hearing at once. None of our crowd ever sang, so don’t waste any of your time taking singing lessons from the lark, the brown thrush, the song sparrow, or any of the rest; it’s good time wasted, as we were not built that way.

“All the beautiful birds and the fine singers are rapidly decreasing in numbers, as well as the birds that are killed for food. Well, we are not beautiful, we don’t sing, and people don’t kill us for food, but we would all be killed if we used no more caution than other birds. Now the quail depends on his swift wings and his camouflaged coloring to provide a method of escape, but the bird dog can easily smell him as he hides in the hedges, and the shotgun can easily reach him when he flies. Never try to

hide. Stay out in the open and keep your eye on everyone, and learn to distinguish the difference between a gun and a pitchfork when carried by a man. Also learn the difference between a man and a scarecrow. Lots of folks lose their head over little things which later prove to be nothing but a scarecrow. However, don't take chances. That is the reason the crow family is surviving and maintaining its numbers, while all other bird families are growing smaller.

"Remember this. Never travel alone. Take someone along with you, no matter if it is on pleasure or business. Here we are out here this morning on business, the business of providing our breakfast. We could all jump down on that young corn and fill ourselves, possibly without any danger of being killed by the farmer's shotgun, but it would be taking a chance, so whenever you feed on the ground or in an obscure location, always post a sentinel, that he may warn the rest of you of any danger while you are feeding.

"The method of deciding who shall be sentinel is determined by the oldest and most experienced crow in the party. In this case I am the one who decides. Therefore, the three of you children shall take turns in doing sentry duty, while your mother and I get



Jim Crow's home overlooks the big wheat field.



Jim Crow—the shrewdest rascal of the bird world.



Bob White's nest before Jim Crow located it.

our breakfast and pull out corn for the sentry. As soon as one of the children has been properly fed he shall replace the sentry, who shall then get his breakfast, and I will give the signal when the change shall be made. You may both start from the field and your post of duty at the same time, but under no consideration must you all be on the ground at the same time without a sentry on duty.

"Now, the duty of the sentry is to observe every moving object and to determine its character. If there is the slightest danger, then the sentry is to give the alarm 'Caw, Caw, Caw' three times to notify the others. If he deems it advisable to order a flight, he does so by a series of calls that definitely locate the danger to the ones on the ground. If the danger be a man with a gun and he is to the west of the feeding party, the sentry is to specify his location by a certain call and fly directly away from him. This will also be the direction that all the rest are to take until out of range of all danger. Other calls will decide the other directions of danger, but while on sentry duty do not become unduly alarmed or excited, or make any fuss unless necessary. Keep your head and always use caution."

"Now you are to act as sentry this morning," said Jim Crow to one of the children, "and as soon

as one of your brothers has finished his breakfast you will be relieved." Putting his words into action, the rest of the family followed Jim down to the ground, where they began pulling up the young tender corn plants and eating the soft kernels from which the young plants started. He showed the youngsters how to do the trick and as soon as one of them had been properly fed, Jim ordered a change of sentries, then the young fellow on the post had his breakfast made ready for him. This was their first lesson and they soon became quite proficient in the art of detecting danger, and determining the difference between a man with a gun and one without firearms.

One day Jim Crow took the children on an egg-hunting trip. He first found Mrs. Meadow Lark away from home, and the crow family made short work of her five speckled eggs. They next located along the old rail fence Mrs. Bob White, with her nest full of beautifully white eggs that meant so much to her. They drove her away after a desperate defense on the part of Bob White and then proceeded to devour the entire lot, a nest of sixteen eggs, which would soon have developed into the best friends of the big farm.

Just as the crow family were finishing the last of



the eggs, Killer, the big hawk, came sailing along and stopped on a nearby fence post to see what all the disturbance was about.

"Say, Jim! You should be ashamed of yourself to rob Bob White's nest like that, and to think you are teaching your children to do the same thing! That is the reason that all the rest of the birds know you as Robber Jim Crow. You should behave yourself and be more of a gentleman," lectured the big hawk.

"Haw! Haw! Haw! That's the best one I have heard for an age! The Killer sitting on his throne, telling the Robber to go straight," returned Jim. "Say, I suppose that you would like all the birds and the quails to hatch their eggs, so that you might kill the defenseless youngsters while they are nice and tender. How about that little white chicken I saw you bringing home yesterday? Suppose Farmer Good missed that one? How about that nest of young red-wing blackbirds I saw you cleaning out the other day? And again you will remember that nice brood of prairie chickens that you kept after for days last year in the big wheat field until you got the last one. You remember all that, don't you? Then you tell me to be a gentleman. Haw! Haw! Haw!" and Jim Crow nearly laughed himself sick.

The hawk was trying his best to frame a suitable answer, when out from an adjoining bush trotted Reddy Fox and the hawk decided it was a most opportune time to leave, but Jim and his family flew up into the nearby hedge trees and, after wiping his ebony beak on the limbs, Jim cried out, "Hello, Reddy! Which way?"

"Oh! Just looking for a young rabbit for dinner. Seen anything around here you cannot use?" answered Reddy.

"Now, children, there is a gentleman and a truthful one. He admits he is after rabbit and not ashamed of it. He would eat you just as quick as he would a rabbit if he had the chance," explained Jim Crow.

"Now don't flatter yourself, Jim! I ate crow once and I am going to be terribly hungry again before I try it the second time. Ground mice, moles, and gophers are real food compared to your family, but when I want a real banquet I know where to go. You think I am going to say chicken, duck, or goose, don't you? Well, they are good, but a young pig is the best meat you ever ate, and I am going to have one to-night or I'll miss my guess. Nothing like it," and Reddy Fox smacked his lips in anticipation.

"I know pig is good to eat, because I cleaned up

some of the ones you killed last week over at Farmer Johnson's. You killed more than you could eat and I found them the next day, so I cleaned up the remains. Folks don't give me credit for a lot of things that I do, but if it wasn't for Old Man Buzzard and me to take care of the dead animals and birds that the people neglect to burn or bury, the country would be unfit to live in. We are busy all the time now, since the automobiles are so numerous. You see Peter Rabbit and his relatives like to play in the roads at night, and the bright lights of the machines blind them; consequently every morning along some of these roads we find a dead rabbit to take care of, and if it wasn't for the crow family, it wouldn't be done.

"Now we don't eat many eggs. Just once in a while we like a change, just the same as you do, but we do eat a lot of corn during the year. Thirty-eight per cent of our yearly food is corn and we don't care who knows it. For the good we do in killing bugs and worms the farmer can afford to give us our corn. Why, bless me, Reddy, I eat every year enough grasshoppers and May beetles to destroy an entire crop. I have eaten many days over one hundred and fifty grasshoppers and in April I have eaten a hundred May beetles in a day. You may not

know it, but nineteen per cent of my yearly diet is May beetles, ground beetles, grasshoppers, caterpillars, and other insects; nine per cent is carrion and other animal matter; thirteen per cent is other grains besides corn; seventeen per cent is wild fruits, with a small amount of fruit from Farmer Good's orchard which he doesn't miss; and then four per cent is weed seed and rubbish. If it wasn't for us the grub worms, cut worms, and wire worms would eat all the corn in the country. Now I am not bragging, but Killer the hawk got me riled up, and I thought perhaps you might like to know more about me," concluded Jim Crow.

Reddy was by this time nearly asleep. He never did like statistics, so he gave one big yawn, stretched himself, and started off, but before leaving he answered: "Well, I was brought into the world, and had nothing to do with it, so someone owes me a living, and I am going to get it where it comes easiest. Everyone knows I like chicken, so if they don't want to lose them, then let them lock them up. So long, Jim. Don't make yourself sick on eggs. Getting a little late in the season, you know. As Killer the hawk said, 'Be a gentleman.' Quit before you get too much," and Reddy went trotting off across the fields, chuckling and smiling to himself, thinking

how Jim Crow had been trying to square himself with him, when he knew very well that he would do anything evil if the opportunity presented itself.

However, Jim and his family were not all bad, as during the month of May a fourth of his food consisted of May beetles which he had killed on the big farm, and which would have destroyed thousands of grain plants. Then in June he ate caterpillars, getting himself ready for July, August, and September when he ate grasshoppers by the thousands, in fact twenty per cent of his diet was grasshoppers. He taught the youngsters how to catch these insects and the family did a great work by devouring the bug, which would have otherwise been most harmful to the crops, so that in the months from October to January, Jim Crow felt that he was entitled to take toll of the corn crop for helping produce it.

One evening in August Jim thought it wise to introduce his family into society, as did other parents of the community, so they called a great meeting one afternoon and arranged that they would all meet the next evening, several miles to the west of the big farm, in a dense grove of trees which bordered the stream that ran through that part of the country. So the next day, as the great red sun was slowly

sinking behind the grove of trees in the west, and with its crimson glow was illuminating the fleecy clouds overhead, great flocks of crows could be seen lazily and quietly winging their way from every direction—all with one idea, all going to the big party.

And what a time they had when they arrived! Such a noise! Every one of the oldtimers was tickled to death to see each other and then there was the noise of introducing their children to their friends' children. They stayed at the party all night and had such a good time that it was repeated the next night and the next, until it became a habit, so that the grove became known to everyone as a great crow roost. Here the crows sat in the trees night after night and had party after party which resulted in making new acquaintances, and here the young fellows selected their brides for the coming year. However, the people on the big farm are as yet undecided as to whether Jim Crow is a benefactor or a pest. His good qualities are nearly overbalanced by his criminal acts, but everyone hopes that some day he will follow the advice of Killer the hawk and "become a gentleman."



Mrs. Bob White Had Her Nest over by the Old Rail Fence.



Jim Crow takes his family to the big picnic.



## ON THE TRAIL OF THE FUSARIUM SPORE

THE great red sun was slowly sinking into the golden sea of a waving field of wheat, that stretched to the west as far as the eye could reach. The lazy wind of that gorgeous June evening was rippling the surface of the great field of grain, as a beautiful lake shimmers in the sunlight when caressed by the mountain breezes, as they play hide and seek amid the rushes and reeds which border its mirror-like surface, hidden away in a forest wilderness. The vivid green of the growing wheat was slowly and gradually changing to a brilliant yellow, which at a distance impressed the imaginative mind as a sea of molten gold. To the casual observer it was a perfect product—a satisfactory consummation of intelligent seed selection, soil management, soil fertilization, and scientific farming. The big farm had had many such prospects in the years gone by, and invariably something seemed to happen just at this stage of the crop which injured the grain in various ways, causing disappointment to the farmer, who had made a supreme effort for a great production.

This year, however, everything seemed so favorable that there appeared no possibility that any injury could occur. The weather had been ideal. The warm days of the preceding week had been followed that morning by a gentle rain, which had trickled down through the mellow soil to the tiny rootlets of the growing plants, and this evening the steaming ground was radiating life and energy. This condition was most desirable for successful growth and development, not only for all plants but also for all kinds of organisms as well, and this evening if a careful search had been made among the plants a certain fungus disease could have been noted making a most rapid development. The organism responsible for this condition is the subject of our sketch.

"I say! What is the matter? Why so quiet?" inquired a fine healthy wheat plant of an adjoining brother, apparently healthy and in fine condition, who had taken on a rather dejected appearance during the afternoon, and had been very quiet. Even the rollicking breeze, as it swayed the heads of wheat to and fro, had failed to generate any enthusiasm.

"Well, I just can't tell what is the matter. I really haven't any apparent cause for worry, but there seems to be something internal which is causing

anxiety. I have an intuition that there is something wrong, that something sinister has taken hold of me, and that I am doomed," answered the wheat plant that had been so quiet all day.

All this time there was something very much wrong with the wheat plant, and as this conversation was being carried on the villain was gleefully chuckling to himself as he slowly but surely made his way up the food canals of the doomed wheat plant. The villain was a five-celled organism, a crescent-shaped spore, known as *Fusarium*. He is so small that millions can be placed together on the point of a knife, and it requires the strongest microscope even to detect his presence.

He had passed the winter in an old husk of corn which had in it a decayed ear of corn of the previous crop. This ear of corn had lost its life through the activities of the villain, and had therefore been rejected as food for man or beast. Not only had the warm days followed by the warm showers induced the rapid growth and development of the young spores, but the falling rain had loosened them from the old husk of corn and washed them into the soil, where they were taken up by the plant rootlets as they gathered their evening food supply from the warm earth. The gentle breeze also caught up

other spores from the old husk, which settled on the blooming spikelets of the wheat plants, and found lodgment there. Here they proceeded to develop and grow and to make ready for the attack which would follow soon. About this time the big prairie chicken rooster dropped down in the wheat field and, in scratching around for worms and bugs, he kicked over the old husk of corn and scattered millions of the newly developed spores, which were caught up by the wind and carried all over the wheat field, finally to come to rest on the young heads of wheat now in full bloom.

Under the favorable conditions of the weather, the spores grew very rapidly, and the young wheat heads began to develop a pinkish mold that soon enveloped each glume and spikelet. Our strong and healthy wheat plant, which had kept in conversation with its neighbor, noticed the failing strength of the infected brother, and as the pink mold developed further over the wheat head, the conversation finally ceased altogether. The pinkish mold spread in succession from one kernel to another, until all the kernels on this head of wheat were infected. Thus the kernels were soon absorbed by the fungi, and the total destruction of millions of heads of wheat was the result. When the owner of the big field again



The Villain.  
Fusarium spores of the wheat  
scab. Highly magnified.



Winter spores of diseased corn.



We were gathered in as the tractors roared past.

looked over his prospect he found a condition he had never seen before, at least one that had been overlooked in previous years.

"That is the most discouraging thing I ever saw," said the owner, as he took some of the infected wheat heads and put them in his pockets for further examination. "To raise a beautiful crop of wheat and then have it destroyed in a manner that defies any defense is most disheartening. Still, there must be a defense and prevention for this thing, and if there is, it must be found," concluded the owner, none other than Farmer Good, who was now thoroughly aroused and had his fighting spirit up. Arriving at his home, he took the infected wheat heads from his pockets and prepared from them several glass slides for his high powered microscope, and upon studying these carefully, he noted the crescent-shaped five-celled spore which made up the mass of pink mold on the kernels.

"There is the fellow that is causing all the damage," said Farmer Good, "but how to stop him is the next question. I wonder where he comes from and how he lives through the winter, and on what crop he worked before this wheat was sown in this field," mused the farmer, as he left the house to walk over to a nearby pasture to look after some cattle.

In passing the garden he threw the remaining infected wheat heads down near the garden gate, and a few minutes later Scrappy, the English sparrow, discovering the wheat heads, pounced on them and began tearing them apart, eating the kernels and scattering the villainous spores in every direction over the garden.

“Ho! Ho! That’s a good one on Farmer Good! I thought I was a goner when he brought me into the house, but here I am right in luck,” exclaimed the villain, as he settled himself down between the warm moist leaves of the young cabbage, while other spores found an equally attractive place among the leaves of the head lettuce. Here they proceeded to multiply, and consequently they attacked these plants, so that in a few days the head of lettuce took on a wilted appearance and finally the stalk turned black at the base, with the result that the head of lettuce was worthless for food or sale. The villain that found himself blown on the cabbage found harder work, as cabbage was more resistant and it took weeks for him to make any impression, so that he finally had to go down in the stalk at the root crown, before he began to get results. However, he was able after some time, with the help of all his children and his relatives, first



to make the cabbage look decidedly wilted, then to turn the leaves yellow and black at the juncture with the stalk, and finally to make the stalk so decayed at the ground that it fell over one evening, unable to combat the unequal odds.

As it did so, Cock Robin flew down and picked up a big cabbage worm which had just abandoned ship, and as he hopped over under the shade of the tomato vines, one of the villains went along, dropping off to wreak destruction on the tomato vines as he had done on the lettuce and cabbage. Here he did his work equally well, and in a few weeks' time many of the tomatoes were in a decided state of collapse—so much so that Farmer Good decided to pull up and remove all the diseased plants of all kinds. But, instead of burning the decayed vegetation, he had it thrown over in an oat stubble field, which was being plowed for the following corn crop. Here the villain and his companions wintered through until the spring, when the corn crop was planted.

“Come on, fellows! Hurry up! Here is where we get to work again,” exclaimed the villain as he awakened his companions on a nice morning in May. “The ground is full of young and tender corn roots, just the thing to keep us alive and make us prosperous all the rest of the summer,” continued the rascal

as he found himself taken up by the root hairs of the tiny rootlets of the corn plant, and he chuckled to himself as he thought of the joke he was now playing on Farmer Good.

However, Farmer Good had been thinking all winter. In all the literature of experiment stations and colleges of agriculture he could discover no solution of the problem, so he determined to find out for himself what was causing all the trouble, and what the cure for it was, if possible. One day in March he was inspecting the seed corn which was being germinated in the seed house. This corn that would be used for planting the fields of the big farm had had ten kernels removed from each ear, and placed in the germinator containing warm, damp sawdust, kept at a constant temperature of eighty degrees. Here the kernels that were from perfect ears germinated and produced the young plant and roots. This March morning, while Farmer Good was looking over the different sets of kernels, he noted a few kernels which had germinated well but at the same time were covered with mold—some with a spider-web type, others with a white cotton-like mold, another of a dark slate color, and others of a pink color which at once attracted his attention.



Three diseased—two healthy heads of Marquis spring wheat.



Healthy and diseased stalks of corn. Note the black pustules on diseased stalk.



The old corn husk—the spreader of Disease in the field of spring wheat.

"Where have I seen that same thing before?" exclaimed Farmer Good aloud. "I've seen it just as sure as I live, and I believe I am on a hot trail. I wonder what the microscope would show here," he asked of himself as he took some of the moldy kernels and started for the house. There he prepared the slides and, carefully adjusting the powerful microscope, he took one glance through the instrument and, with a cry that brought everyone in the house to him, he exclaimed:

"Ah! Now I know you, you villain! You are the same fellow I found in my spring wheat—the same pink mold. I knew I had seen you before. Now I know how you got into the spring wheat. You lived over on the old ears of corn left in the field. I wonder where else you wintered and in what state you existed. There must be a winter spore somewhere, from which this pink mold has developed, and if I can find that fellow I can then make the entire connection."

He went at once to the corn field, where the old weather-beaten corn stalks were still in the field. He collected several husks, decayed ears of corn, leaves, and stalks, then brought the entire collection into his seed house. Here he made a careful search of every part of the old plants, and noted that some

of the stalks were clean and bright, while others were darkened in spots, especially just below the nodes or joints. These dark spots resembled soot from a chimney and could easily be scraped off with the aid of a knife. From these he made cultures which soon developed the pink mold and again in looking through the microscope he found the same crescent-shaped villain which he had found in the corn kernel and the spring wheat head. Then he took the decayed kernels from the old ears of corn he found in the field, also portions of the darkened spots of the interior of the corn stalks, and having made cultures of these, he developed the same molds as were shown on the kernels in the germinator, carrying the same villainous spores.

“Well, at last I have established your true line of relation, you renegade, but if you are able to destroy some plants, why is it that you have no effect on others? I wonder if it is because you do not happen to come in contact with them, or is it that they are able to resist you? I remember some of the kernels in the germinator were badly infected, while adjoining ones were not affected at all. However, there is one thing lacking in the chain of circumstantial evidence: How did that fellow secrete himself on that kernel of corn in the germinator? We

must be able to determine that, or the corn will be ruined after it is planted in the ground. There is only one thing to do: Run another test of these diseased ears through the germinator, and treat the kernels in various ways before placing them in the germinator, in order to determine where that villain is in hiding."

Again selecting the ears which were badly infected, he took ten kernels from one and subjected them to boiling water for a moment. Another set he used a flame on, to destroy any spores on the surface; for another set he used sulphur fumes, while on other sets he dropped the kernels in acids of various kinds. Then all these kernels with the various treatments were placed in the germinator, and in a few days the same pink mold began to develop.

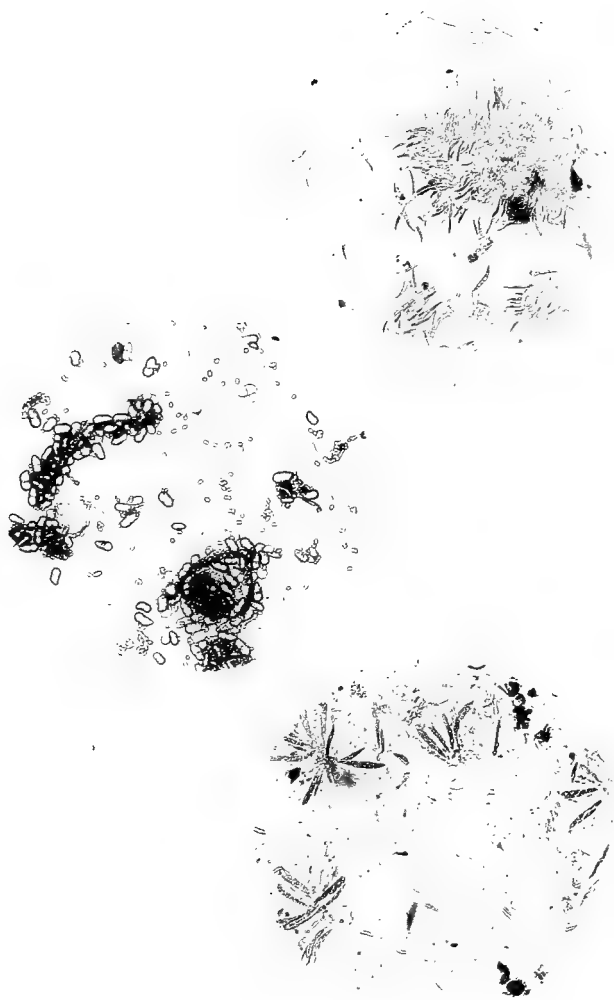
"Well, the trouble is not on the outside of the kernel, it is on the inside," Farmer Good thoughtfully commented to himself, "and it is evidently more work for the microscope."

Next, taking some of the diseased kernels, he cut them in cross section with a sharp knife, and noted the diseased series of starchy cells called the scutellum, surrounding the embryo, or germ of the kernel. He made some very thin cross section slides for the microscope of this portion of the kernel, and after

properly preparing them for observation he took a long look through the powerful lens. What he saw there made him shudder to think what the consequences to the corn crop of the Nation would be if this disease was not stopped. The magnitude of the task was also apparent, as to attempt to destroy the disease was also to destroy the life of the kernel. What he saw through the eye-piece of the instrument gave him some idea of the fight ahead, as in the decayed part of the kernel, surrounding the germ or embryo, the heart and life of the corn, were to be seen hundreds of the *Fusarium* spores, which were quietly but surely causing the destruction of the kernel, as they also had attacked the plumule and rootlets.

“Well, that is getting him located all right, but what can be done? The moisture and heat necessary to germinate the kernels in the soil at the time of planting will also bring to life these dormant spores, which will then destroy the kernels. I wonder if some of the healthy ears of corn do not have these spores, as well as the more unfortunate ones, but some of them are more resistant than others. This appears to be the only conclusion, especially in view of the fact that these spores are carried over from one season to another within the kernel itself.





The villain of the old corn husk and the pustular of the diseased corn stalk.



Three diseased and two healthy stalks of growing corn. Diseased stalks with root system destroyed.

Young fellow, I believe it possible to create strains of plants which will be able to resist your attacks, and I surely am going to try to create such varieties," soliloquized Farmer Good as he sat there before his microscope, mapping out his campaign of work for the coming year, which was eventually to revolutionize the work of grain production.

However, all this time the villain was likewise making use of his opportunities. As the infected wheat straw was scattered in the winter over the gardens, the villain made ready to attack any vegetable that might be planted in the spring, and when the straw was put over the flower beds he at once attacked the chrysanthemum plants, so that the stems became weakened, and later on broke over, causing the destruction of the blooms. Also, when the straw was scattered over the fields as fertilizer to be plowed under, the spores were again placed in position to do the most harm to the following crop.

As the winter days wore on and the welcome days of spring arrived, Farmer Good had completed his program. He was going to plant several rows of corn from seed that showed no disease or infection, and alongside in alternating rows he intended to plant seed which showed infection in varying stages, while during the summer he would take many ob-

servations. One beautiful warm day in May he planted in each row the seed from one ear of corn only. Some rows were from diseased ears, while other rows were planted with seed from disease-free ears, as shown at the time of germinating the kernels in the seed house. He did not have long to wait in order to ascertain the results. The disease-free seed sent up the young plants quite early, a very vigorous plant with a most healthy color, while the diseased rows showed plants with poor color, weak germination and growth, with many plants dying early, also many plants with a grass-like appearance. As the season advanced the diseased rows developed many red and purple stalks and leaves, with no ears on the stalks whatever, also many barren stalks which were normal as to color. Then quite a percentage of the stalks of the diseased rows would break over.

This was brought to the attention of Farmer Good very forcibly. One day when some of his friends were in the field inspecting the work, one of the men admitted that he was quite skeptical, and couldn't believe all that had been told him about this new work. He had just said that he did not believe that a small spore or organism could cause all this trouble, when directly in front of him, as if to impress upon

his mind the fallacy of his statement, a large fine stalk with a good ear of corn attached fell over, breaking about two feet from the ground, and just barely touching the man as it fell. As there was not the semblance of a wind, or even a breeze, the falling of the stalk at once attracted the attention of everyone present.

"There, now, is a wonderful example of what it can do," exclaimed Farmer Good. "We will now examine that stalk and prove to you just what happened."

So, taking his knife, he split the stalk its entire length, and showed the blackened and purple diseased spots in the fibrous structure, extending the entire length of the stalk. At the place of the break, it was weakened to a greater degree by a more severe diseased condition. When the stalk was pulled from the ground, it was found that most of the roots were badly decayed, making it impossible for them to perform their function of collecting plant food from the soil and transmitting it to the plant, and, since the plant was not properly nourished, it was more susceptible to the attacks of the disease.

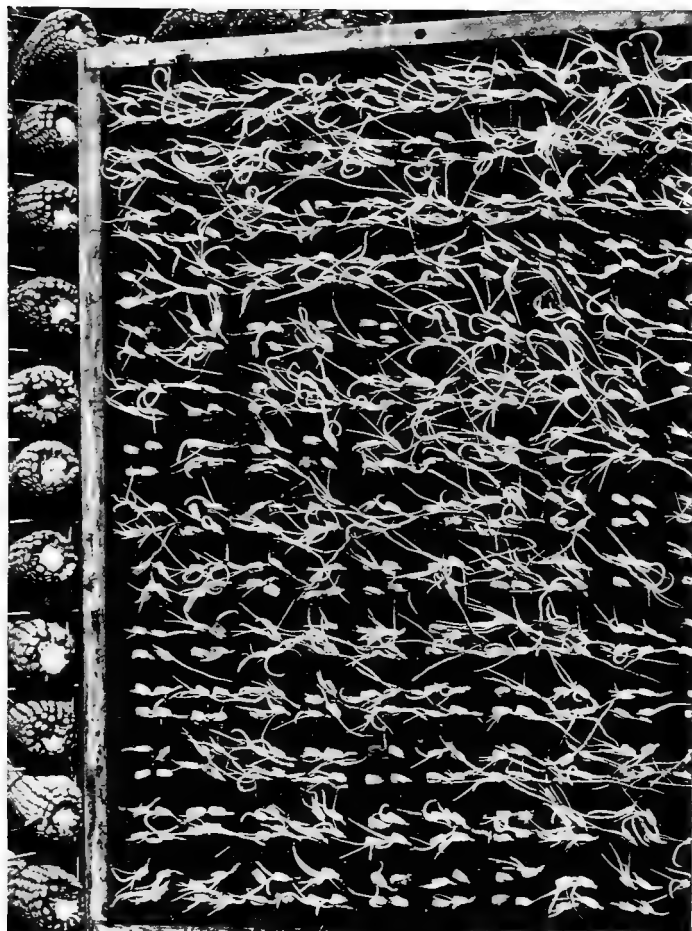
"Now my theory is this," began Farmer Good. "If we can improve our plants to such an extent that they will be properly constructed and abundantly

able to nourish themselves, and if by proper breeding we eliminate the undesirable qualities of the plants, improving the more desirable qualities through cross-breeding, we shall then be able to establish disease-resistant strains of our great agricultural grains and thereby eradicate many of our worst diseases.

"We have now proved that the old corn stalks are a rank source of infection to the following crop of spring wheat, or to the corn crop if the field is again planted to corn. Therefore, it seems desirable that we should sacrifice some of the fertilizer found in the stalks when plowed under, in order to eradicate the disease more quickly. So when we plant either corn or spring wheat following corn, the ground should either be plowed early in the fall, as soon as the corn is harvested, or the stalks should be destroyed by burning in the spring.

"Then, of course, we must make a most rigid test in germinating the seed corn and plant only the seed which is disease-resistant or disease-free. Also, the infected wheat straw should never be returned to the fields as fertilizer or protection to other crops, as it only aids in distributing the disease further over the farms.

"Now, after working with plants as many years as



The *Fusarium* disease cannot escape the germination test. Here the villain is uncovered.





I have, and noticing the effect of care, treatment, and proper nourishment on increased production and the better quality of the resulting product, I am more convinced than ever of the great field for improvement that we have in creating better citizens for our country, by using the same careful methods with our children as we do with our plants. If the mothers and fathers of America would exercise the same care in bringing their children into the world and in their development that they do in growing their pigs, horses, cattle and plants, the Nation could be most wonderfully advanced within two generations, and some day I hope that through such work as this the people of our country will realize these great possibilities."













